

THE ROLE OF THE UNIVERSITY IN NATIONAL DEVELOPMENT

Four Asian Case Studies

The Role of the University in National Development

FOUR ASIAN CASE STUDIES

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VIKAS PUBLISHING HOUSE PVT LTD

Regd. Office: 5 Ansari Road, New Delhi

H.O. Vikas House, 20/4 Industrial Area, Sahibabad, Distt. Ghaziabad, U.P.

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ISBN 0-7069-0969-0

IV2K4501

Introduction

Societies of the "Third World" which are in the throes of profound and rapid changes offer unprecedented opportunities for social science research by their social scientists, some of whom are called upon by their governments to assist in the programmes of development. The massive involvement of scholars in developing countries in research activities has, on the one hand, prompted a process of "internationalization" or "globalization" of social sciences, which requires "deparochialization" of existing theories and prevalent methodologies through testing their validity and utility in settings other than those where they originated. On the other hand, the concern of social scientists, particularly in the regions with socio-economic problems of development, has raised the question of the utilization and application of social science knowledge in policy-making.

Since its inception, Unesco has encouraged the clarification of issues of universalization of sciences and the relationship between sciences and society. In the context of developing countries, Unesco has provided forums to examine the problems of their profession, to identify areas of research and to suggest mechanisms for collaborative efforts in the field of research.

This volume originated at one of those forums held at Kopo, Indonesia, in February 1974. Some twenty social scientists invited to this meeting from the Asian and Oceanian region to discuss the social science research development proposed that the comparative and cross-national *interdisciplinary research should be an ideal way* to enhance both "internationalization" and "utilization" of the social sciences.

The two topics identified by the participants as priority research areas were Modern Medicine and Modern Education, both treated as important dimensions of development. Accepting the recommendation of the Asian social scientists, Unesco launched two projects on these themes, each originally conceived to be a five-nation study, thus covering ten nations of the Asian region. This volume presents

the findings of the project on modern education, finally carried out in four countries—the Republic of Korea, Pakistan, the Philippines, and Thailand.* The project on modern medicine was carried out in three countries—India, Malaysia, and Sri Lanka; it is reported in another companion volume—*Doctors and Society: Three Asian Case Studies*.

Both the projects were truly collaborative in nature in the sense that the participating researchers jointly evolved the research designs, and closely followed the guidelines in the preparation of the reports. The research design was not imposed from above; the researchers created it themselves.

Although the two projects relate to two aspects of society—Health and Education—both are viewed in the overall framework of development. The two research teams were invited to Manila in October 1975 to discuss the two topics and formulate research designs to ensure not only comparability of data for each set of studies but also to identify points of convergence between the two.

The project on modern education focused on the role of the university. The Team felt that in the all-pervading process of modernization, through which the countries of Asia are currently passing, education has acquired a prominent, if not a paramount, place. Education is regarded as an investment in man and, therefore, a prime mover. Education as a socialization process is indispensable, if only to maintain the existing social system. When society develops, i.e. when it becomes more conducive to the attainment of the goals of the majority, if not all, of its members, its system is necessarily complex and comprehensive to meet varying demands and needs. In this context, it is the country's educated elite who have an important role to play as pace-setters; and it is the size of the intelligentsia in a country that provides a very definitive index of its development, particularly in the context of modernization.

As centres of higher learning, the universities have rightly been regarded as the potent agents of development and change. Questions have, however, been raised in regard to their actual role in the development process. Are the universities engaged in the process of socialization for the future? Or, are they simply performing the task of transmitting the cultural heritage to the students? Are they

*After having worked for some time on the study, the Indonesian scholars opted out commitments.

"conservative" in their approach, or have they relocated themselves in the newly defined role of development agent?

Queries such as above can be summed up in the master questions: What has been the role of universities in the post-independent phase? What contribution are they making to the nation's development effort?

The word "development," in the context of the present project, takes on the definition given it by the country in question. This is done with a view to avoiding researcher's own bias. In a study such as this, in which four countries were involved, and scholars drawn from different disciplines participated as principal researchers, each researcher could have imposed his own conception of "development" depending on his ideological predilection, and theoretical and disciplinary orientation. Broadly, *development* is taken to mean a change from a given state or condition to a more specialized state or condition, considered "better" and "desired" by the society in question. Such development may occur in all sectors of society.

While analyzing the "contribution" of the university, an effort has been made to describe and catalogue, rather than to evaluate and judge, the kinds of goods (knowledge, ideas, skills, values) and service (teaching, research, consultation, planning, decision-making) offered by it to the society.

In each of the four countries, where the research was carried out, an institution of national importance was selected for intensive case study. One university from each country was chosen in terms of the following criteria, laid down by the Research Team in the Manila meeting:

(a) The university should be of national importance as a centre of higher learning, drawing both its staff and students not only from a given province or a region but virtually from all over the country, and even from abroad.

(b) The university should receive its principal budget from the government although the administrative relationship between the government and the university may vary from one country to the other.

(c) The University should be located in a metropolitan town, although not necessary in the capital town.

(d) It should be a general university and not a specialized university, such as a technological or agricultural university.

Based on the above criteria, the following universities were selected:

1. University of Karachi, Pakistan.
2. Chulalongkorn University, Bangkok, Thailand.
3. Seoul National University, Seoul, the Republic of Korea.
4. University of the Philippines, Manila, the Philippines.

The university in the context of this project was regarded as a "subsystem" of society engaged in the threefold task of dissemination, generation, and utilization of knowledge. The dissemination of knowledge takes place, first of all, in the form of teaching but also includes publication and use of means of mass communication by the university staff. The generation of knowledge, on the other hand, is mainly manifested in research activities. The utilization of knowledge is concerned with problem-illumination, analysis, and policy-formulation on specific issues confronting policy-makers.

Since universities impart instruction, and carry out research, on a wide variety of subjects, the Team decided to examine in depth the three functions of the university as performed by the departments of history, economics, chemistry, and civil engineering, representing the humanities, the social sciences, the natural sciences, and the technological sciences respectively.

Each study opens with a general introduction to the national system of higher education, describing the structure and listing the main trends (increase in numbers, typology of institutions, shifts in emphases, focus on research, the problem of educated unemployment, etc.). This is followed by a brief description of the university, chosen for case study. The university is introduced in terms of its geographical location, its history, its organizational and administrative structure, and its general ethos.

The study then turns to an examination of the three functions performed by the university through a detailed and in-depth study of the four departments.

It will be useful here to reproduce the way the Research Team defined the three functions.

Dissemination of knowledge

The main function of the university is generally regarded to be teaching. Teaching itself might not be limited to the teaching of students who are registered as degree candidates at the university

chosen for the study but might also involve teaching non-degree students, teaching students of other institutions of higher education, or even teaching individuals who are not formally part of any institution of higher education (teaching of personnel of government agencies, military personnel, etc.), including teaching the teachers of secondary schools. The dissemination of knowledge (empirical, theoretical, normative, etc.) is, however, not limited to teaching because knowledge can also be disseminated through writing, particularly publications, and the use of such media as radio and television.

Generation of knowledge

The generation of knowledge is manifested mainly, but not exclusively, through research activities. The types of problems which, for one reason or another, are selected as subjects of research can give clues to the areas in which the universities have made the contribution. The contribution is reflected in the form of the research products (monographs, articles in professional journals, etc.).

Utilization of knowledge

Members of the university community also utilize their knowledge in an endeavour to deal with certain problems. The utilization of knowledge may assume the form of transforming knowledge into specific development plans for the university itself, government agencies, or other organizations; transforming knowledge into decisions for action; essays, pamphlets, and the like which are written to argue for particular types of action by others; and, perhaps, using particular types of knowledge in street demonstrations to exert pressure on the government or the general public. The utilization of knowledge may involve the adoption of such formal roles or positions as planners or decision-makers.

The four country reports included in this volume follow the above-mentioned general framework of research. They nevertheless show quite distinct disciplinary inclination and bias, making the comparison more interesting, and somewhat demanding.

Certain roles of higher education are more visible and qualifiable than others which can be assessed only in a general and longitudinal way. For example, historical studies might help to inculcate among the people a sense of national identity and solidarity, whereas civil

engineering may provide better facilities for transport and communication. These two are undoubtedly important aspects of national development whose urgency and need depend upon a given period in the country's development as well as upon different perceptions of the missions of the university among academics on the one hand and policy-makers on the other. This raises the question of academism versus pragmatism and basic versus applied research. All the country reports are, thus, rightly concerned with the question of communication between the university and the government.

The Korean Case Study conducted by Dr Yersu Kim, Professor of Philosophy at the Seoul National University, presents an interesting account, based on a questionnaire analysis, on the perception of the faculty about their own role in national development. The study also shows that the rapid quantitative growth of higher education during the 1950s and the early 1960s was not necessarily a result of conscious educational plans geared towards development, but rather due to traditional high prestige accorded to learning. The reorientation of university research—from the basic to the applied—by the influx of the government funding for the latter does symbolize that the university is also a recipient of developmental effects.

Professor Raul P. de Guzman, Project Director of the Philippines Case Study, has produced a solid and comprehensive report on the role of the University of the Philippines which enjoys an outstanding place in higher education of the country. The University consists, as of June 1975, of 36 colleges and schools offering 114 undergraduate programmes leading to bachelor's degree and 14 undergraduate diploma or certificate degrees. It has graduate programmes with the student enrolment of about 3,700 in 1974-75. In research activities, there exist broader channels of communication between the producers and users of research in which the Office of Research Coordination of the University plays a crucial role. The University offers consultative services and technical assistance to national leaders, policy-makers, government agencies and to private organizations and associations on a relatively extensive scale.

In the Pakistan Case Study, Professor S.M. Hafeez Zaidi, Professor of Psychology of the University of Karachi, identifies three ways through which the university may contribute to national development. He maintains that the universities in Pakistan were handicapped by the lack of a consistent manpower planning, the absence of systematic liaison for the university's advisory role until

1971, and, lastly, by the general indifference of the country's bureaucracy towards the university. The situation, however, has improved since 1972 with the enactment of the New Education Policy and the formulation of the University Act. The role of the university in national development, especially its direct and conscious aspects, needs to be assessed in such a historical perspective. An interview conducted by the author with several professors and students at the University of Karachi indicates this ambivalence although we may find a "qualified agreement" on the positive role of the university in national development.

Professor Prachoom Chomchai, in the Thai Case Study, evaluates the university's role in development from a distinctively economics point of view through his systematic analysis as to how university-trained manpower is being used or not used. Whatever the contributions that the University makes, the unemployed university graduates can be generally said to be deprived of ways and means to serve the society, if only temporarily. As the author says: "... a developing country can ill-afford to devote a sizeable proportion of its scarce resources to tertiary education, least of all if only to turn out graduates, many of whom become idle and eventually, unless work can be found, unemployable." Chulalongkorn University enjoys a status of national importance with the student number of 22 per cent and the faculty staff of 24 per cent of the national totals as of 1973. Such a university, Professor Chomchai maintains, may well be a force that changes the traditional social systems which are breaking down in many developing countries. This point is important since development is not a smooth transition from one state or condition to another, but implies a process in which old and new factors are often at conflict.

These four case studies point to a commonly held claim that the university's primary contribution to development consists in producing its graduates, indispensable human resources, for national development. Among the three functions of the university identified for this comparative study, teaching or dissemination of knowledge far outweighs the remaining two functions of generation and utilization of knowledge. The rather critical essays on the University of Karachi admits that the University makes a valuable contribution as far as its teaching is concerned. The Thai study shows that Chulalongkorn University devotes some 82 per cent of its resources to "production of graduates" compared with about 5 per cent for

"research." Research activities still occupy a secondary place in all case studies. The University of the Philippines appears to be most successful in having its advisory role performed vis-a-vis the government's development plan. It is, of course, difficult to confine the utilization function only to the university faculty; the university graduate does use his or her specialized knowledge in work. Indeed, the very act of dissemination presupposes the use of disseminated knowledge or skill.

This being said, we need to look once again at "developmental processes" where a number of variables interact with one another—higher education is just one of them—over which no national decision-maker has full control. Some variables may be simply beyond human technological control. Some variables may be trans-national in their activities. An attempt to assess the role of the university in development in any quantitative manner requires identification of the relative importance of all remaining factors in a given historical situation. The scope of the present study, however, is a modest one but is intended to establish a general framework to identify particular goods which the university contributes to a number of selected sectors of activities for national development. In this respect, the country reports included in this volume constitute a first attempt towards more specific and evaluative questions on the interrelationships between higher education and development.

This cross-national comparative study was designed and carried out by Asian social scientists on the theme they themselves identified as a priority research area. To say nothing about the academic contribution they have made through this study, the value of the very experience of collaborative research by social scientists in Asia should be duly recognized since such collaborative undertakings are still to be promoted in this region as they are in other developing regions.

The designations employed and the presentation of the material in this volume do not imply the expression of any opinion whatsoever on the part of the Unesco Secretariat concerning the legal status of any country or territory, or of its authorities, or concerning the delimitations of its frontiers. Opinions expressed are those of the authors and do not necessarily reflect those of the Organization.

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**The Republic of Korea:
The Seoul National University**

YERSU KIM

Thailand: Chulalongkorn University

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1 Introduction

National development is wide-ranging in scope, and essentially the result of human effort. The capacity of a nation to develop economically, socially, politically, and culturally derives largely from the power to develop and utilize the capabilities of its people. Education, particularly higher education, is thus the *sine qua non* of national development, since ideally it produces the high-level manpower needed.

Education, especially higher education, can, however, accelerate and/or impede national development. Korea seems to present a prime instance of the ambiguity in the relationship between education and national development. Statistics of higher education in Korea are impressive indeed. As of 1975, there were a little over a quarter-million students enrolled in more than 270 institutions above the level of secondary education, including universities, colleges, junior colleges and vocational colleges.¹ Harbison and Meyers place Korea in the group of semi-advanced countries in terms of educational input.² That judgement was pronounced in 1964, when per capita income was less than US \$100, while it is more than US \$500 today. And yet, the judgement of those intimately concerned with the course of Korean educational development is at best divided. While many see the rapid growth of higher education and the consequent proliferation of university graduates as having provided the pool of human resources needed for a developing nation such as Korea, a leading Korean scholar of education goes so far as to state flatly: "Korean education is clearly divorced or runs counter to the needs of national development."³

¹Statistical Yearbook of Education, Ministry of Education, Seoul, Korea p. 173.

²Frederick Harbison and Charles A. Myers, *Education, Manpower and Economic Growth*, New York, McGraw-Hill, 1964, p. 47.

³Chung Bum-mo, *A Prolegomena to Development* (Korean), Seoul, Bak-yung Sa, 1966, p. 216.

random and ad hoc. It is a commonplace in the literature of development nowadays that national development does not exhaust itself in economic development, but must embrace political, economic, social and cultural aspects of a national life as well. Thus the following questions, which take into account the various components which together constitute national development, served as the guidelines in selection and organization of the material:

(a) To what extent have the universities in Korea contributed to economic growth? Consideration of the problem involves: (1) the supply of high-level manpower, (2) the supply of innovative ideas.

(b) To what extent have the universities in Korea contributed to formation of national consciousness and national integration? The question involves consideration of: (1) political stability, (2) attitude toward the ruling political power.

(c) To what extent have the universities in Korea contributed to increased social mobility? The problem involves examination of questions concerning: (1) equality in educational opportunities, and (2) symbolic vs. functional values of higher education.

(d) To what extent have the universities in Korea contributed to the promotion of developmental values and attitudes? Such items as: (1) increase in rational mode of thinking, (2) increase in achievement need, and (3) encouragement of innovative personality, will be considered.

For reasons which have been enunciated in the research design prepared by the project coordinator, no attempt is made to define the concept of national development. A broad definition, as is given in the research design, of development as a "change from a given state or condition to a more specialized state or condition, considered 'better' and 'desired' by the society"⁴ will suffice for our present purpose. This is essentially a descriptive rather than an evaluative account of the kinds of goods and services offered by the university to the society in so far as they contribute to development of that society. Seoul National University was chosen for this study in accordance with the criteria laid down by the project coordinator. It is a general university of national importance located in the capital city of Seoul and receives its principal budget from the government. Also in accordance with the stipulations laid down in the research design, the following four academic departments have been selected for intensive studies regarding their respective contributions to national development:

Department of Korean History, College of the Humanities;
Department of Economics, College of Social Sciences;
Department of Chemistry, College of Natural Sciences; and
Department of Civil Engineering, College of Engineering.

This report on the Korean case of the relationship between the university and national development consists essentially of four parts:

- (a) background information on the country in so far as they are relevant to the subject of the report;
- (b) background information on the development of higher education in Korea;
- (c) a general description of Seoul National University; and
- (d) descriptions of the goods and services offered by the department selected for this study.

Background information and descriptions cannot however be

⁴Final Report, Meeting of the Regional Research Teams, Philippine Village Hotel, Unesco, Office of the Regional Social Science Adviser in Asia, Jakarta, pp. 11-12.

heavy borrowings of Western experience and technology, and all the fads and fetishes, the disorders and aberrations seemed an inevitable part of it.

Two basic realities are operative today in Korea as constraining factors to be overcome in pursuit of the "basic, free and democratic order," which is the national objective as set forth in the 126-article Constitution. One is the fact of national division, the other, the fact of inherited poverty.

The division of the nation into two ideologically opposed entities vying for ascendancy circumscribes national development in more than one drastic way. The most important of these circumscriptions is perhaps the necessity of maintaining a relatively high level of ideological and political consensus within the Republic of Korea. The ideological confrontation further necessitates the pursuit of national strength in military and economic terms as a basic and primary goal required for survival and security of the nation. Coupled with the need for a careful management of the process of the ideological confrontation, certain dirigistic tendencies arising out of the need for organizing national potential and for maximizing political efficiency have been steadily increasing in recent years. They culminated in the constitutional amendment of 1972, which, while preserving the basic structure of democracy, was designed to foster the development of a political, social and economic system uniquely suited for the reality prevailing in Korea.

The imperative of overcoming the inherited poverty necessitates a rapid economic development. While there may by differences of opinion over the question of how best to achieve such a development, there is within Korea a broad consensus over its imperative nature. Thus at the initial stage of economic development, nothing was allowed to disrupt its process, with its heavy reliance of Western money, experience and technology. The developmental process itself however bred a certain frame of mind which placed speed, efficiency and effectiveness above all else, and it was thus seen that a certain number of residual values and attitudes from Korea's social and political past—chief among them regressive outlook on life, defeatism, tendency to look down on manual labour—were detrimental to the developmental process itself. Signs of de-humanization and alienation were becoming everywhere visible, particularly in cities. Restoration of balance between the efforts to eradicate values and attitudes impeding development, on the one

2 Country Profile

National identity, national security, economic development

Korea is a young country in an old culture. Throughout more than four millennia of recorded history, its people formed a largely homogeneous group of Mongolian ethnic origin, inhabited essentially the same geographical confines of a narrow peninsula of a vast Asian mainland, spoke a singular language of the Altaic family, and lived in a essentially homogeneous cultural milieu. However, situated as it is on the eastern periphery of the Asian continent and cut off by water on three sides from other potential countervailing influences, the Korean peninsula was exposed from early on to the pervasive influence of China. The influences and borrowings from China have in time left their indelible marks on the philosophical, cultural, political, religious, linguistic and social forms of Korean life.

Korea then opened its door to the West a century ago. Suddenly confronted with the vitality of Western culture during the latter half of the last century, Koreans blamed their own political and cultural tradition for the stagnancy, ineffectiveness and injustice of their society. Then came thirty-six years of colonial rule by Japan. The colonial regime undertook a systematic and whole-scale distortion of the Korean tradition portraying it as a record of subserviency to China and, therefore, of no intrinsic worth. Despite efforts by a handful of Korean scholars and historians, the *de facto* devaluation of their own tradition was deeply ingrained in the minds of Korean people. Koreans were thus highly receptive to the political, social and cultural ideas and institutions that the Americans brought with them after the Second World War. Their dissemination was all the more rapid and effective, because they were part of the culture of a welcome liberator and, later, a powerful ally in Koreans' struggle for survival in the Korean war. Intellectual and political leaders of the time had neither ability nor discrimination to choose among the goods dispensed by this new culture. Furthermore, the course of economic and social development necessitated

while 2,743,000 moved out of them, thus adding 325,000 to the urban population.

An analysis of population distribution showed the population heavily concentrated in the southwestern plains and southern coastal areas, reflecting the nation's heavy dependence on agriculture and fisheries for its livelihood. The economic population (persons between 14 and 64 of age) was estimated at 13,737,000 as of June 1975. The number of employed persons was put at 13,314,000 or 96.9 per cent of the economic population in 1975. Of those employed, a total of 7,261,000 or 54.6 per cent were engaged in agriculture and fishing. The figure represents a decrease of 2.1 per cent over against the figure for the previous year. The census data of 1940 puts about 80 per cent of the total population on the farms. 15.6 per cent of the total population is engaged in the mining sector, while the services, business and social overhead sectors claim 29.8 per cent.

Size

Korea consists of a mountainous peninsula jutting out from Manchuria and 3,579 contiguous islands, and lies between 124° 11' and 131° 11' East Longitude and between 33° 7' and 43° 1' North Latitude in the northern temperate zone of the Eastern Hemisphere. The total area of the country is 220,813 square kilometers, of which the main peninsula comprises 96.6 per cent while the contiguous islands make up the rest. In size, Korea can be compared with the British Isles, Rumania or New Zealand. The major portion of the country is mountains, while only 20 per cent of the total area is flat lands. Korea possesses no vast plain.

Article 3 of the Constitution of the Republic of Korea claims the Korean peninsula and its adjacent islands as its territory. The Republic, however, exercises effective control over only the southern part of the peninsula divided by a military demarcation roughly coinciding with the 38th parallel line. This area is 95,232 square kilometers and compares with Jordan, Hungary or Guatemala.

People

Koreans are a homogeneous race distinct from both the Chinese and the Japanese. They are generally considered by anthropologists to be descendants of the Tungusic branch on the Altaic side of the Ural-Altaic family. It is believed that a common Tungusic ancestor

hand, and the efforts for early prevention of the spiritual ills of modern industrial society was clearly called for. The New Community Movement—Saemaul Undong—initiated by the government in 1970, must be seen within the context of these problems. A campaign designed to modernize rural areas and to improve the living standard of the rural population, it was aimed at fostering the spirit of self-help, diligence and cooperation by stimulating hitherto dormant incentives among the rural population. The basic Korean cultural stratum with its large emphasis on mutual cooperation based on kinship and other human ties has always remained stronger in rural communities rather than in the more prestigious and explicit aristocratic culture based on the borrowings and influences of China. The movement attempts to draw upon this implicit and informal cultural pattern.

These, then, are some of the salient features that must be taken into account in understanding any facet of the contemporary Korean reality, including that of education, and more particularly, of higher education.

Demographic features

According to the latest census conducted by the government, the total population of the Republic of Korea numbered 34,688,079 as of 1 October 1975. The population grew at the rate of 1.7 per cent during the year 1975, marking a considerable slow-down in growth compared with the 1966-70 period when the official figure was 2.27 per cent. The average life expectancy was estimated at 68 in 1975. This compares with 65 in 1970 and 60 in 1960. The census also put the population density at 351 persons per sq. kilometer, representing an increase of 32 persons compared with the figure of 319 in 1970. The Republic of Korea is thus the third most densely populated country in the world, trailing only Bangladesh and Taiwan.

The general demographic picture of the country during the five years preceding the latest census was characterized by an increasing migration from rural to urban areas. According to the census, only 36 of 138 counties in the Republic registered increase in population during the 1970-1975 period while the population in the rest of the countries decreased. In contrast, population in the 35 major cities increased by a whopping 29.7 per cent during the period. In 1973, the number of those who migrated into the nation's seven major cities including Seoul, Pusan and Taegu were 3,068,000,

Korean has been hindered by two developments. Although King Sejong of the Yi Dynasty gave the Koreans their own phonetic alphabet of great efficiency and simplicity, Hangul, in 1443, enabling them to write the vernacular language with great facility, its use was discouraged by Confucian scholar-bureaucrats for whom familiarity with Confucian classics and Chinese literature was the mark of an educated person. In fact, beginning with the establishment of a Confucian academy in the Silla period (682), the content of education in Korea has consisted primarily of Chinese learning. Many passages and quotations from Confucian and other Chinese literary classics became household words in Korea. Thus a sharp cleavage developed between the written and spoken languages, undermining the normal evolution of the Korean language. The other hindrance was the policy of the Japanese colonial regime (1919-1945) which attempted to destroy the Korean language. The teaching and eventually the use of the Korean language in schools of various levels were banned toward the end of the Japanese rule. During the 36 years of colonial rule, there grew up two generations of bilingual Koreans for whom Japanese was the language for public purposes, and Korean private and often clandestine purposes.

Immediately following the Liberation, there were movements to replace the Japanese vocabulary, to coin new Korean words for the Chinese vocabulary, and to adopt a horizontal system of writing. Much of this ardent reformistic zeal succumbed to the political tension of the time but a pattern of evolutionary changes did emerge. Newspapers today generally retain Chinese characters on the political and economic pages while social news and stories of human interest are printed in Hangul. School text books are all in Hangul; the government policy regarding teaching of basic Chinese characters has undergone a number of changes. However the irreversible trend seems to be that the use of Chinese characters will eventually be totally eliminated.

Religion

Article 16 of the Constitution of the Republic of Korea guarantees freedom of worship to all citizens, rejects any form of State religion, and provides for the separation of State and religion. Respect for and tolerance of genuine forms of religious worship have always been part of the Korean tradition. A wide variety of religious worship has existed in Korea for thousands of years.

was assimilated partly into the Chinese, and other developed into Koreans. Despite the common ancestry of the Korean and the Chinese, the people of Korea managed to preserve their distinctive racial and cultural traditions through more than four millennia to grow into the homogeneous race that they are today. This racial homogeneity has been a matter of fierce pride throughout the political, cultural and social history of the Korean people.

Linguistic profile

The Korean language is the only common medium of the inhabitants of the Korean peninsula. The origin of this language has not been established definitively, although it is fairly certain that it derives from the Tungusic branch of the Ural-Altaic family which traces its ancestry to central Asia. Since however the Korean people are primarily of Mongolian origin, having migrated from Siberian and Manchurian regions into the Korean peninsula, one may infer that the Korean language is somewhat related to Manchu or Mongolian. But in fact Korean and Mongolian much more apart from each other, both in vocabulary and syntax, than are English and German, or English and French.

The influence of Chinese language and letters on the development of the Korean language has been great. The Chinese writing system, after it was introduced to Korea more than two thousand years ago, gradually became and remained well into the nineteenth century the only written language used for official business and scholarship. Korean, like English, is a hybrid language with a dual strain of Chinese and the original native language running through its vocabulary as Latin and Anglo-Saxon runs through the latter. Korean grammar, however, is entirely different from Chinese, retaining to this day its Altaic origin.

The Korean language is rich in sound, and there are ten primary vowels, as well as secondary or derived vowels. Honorifics are widely used: the ownership of an article, for instance, may affect the verb used for it in accordance with the complex social order. Another characteristic feature of the Korean language is the seeming inexhaustibility of its vocabulary. This is true, however, mainly of concrete things as well as of human feelings and sentiments. It is short however of words related to abstract reasoning and logical thinking.

During the past several hundred years, the normal evolution of

cludes one of Korea's largest universities, three colleges, scores of secondary schools and other educational institutes. Buddhist-operated factories and enterprises also subsidize a number of charitable organizations. Although marred by frequent denominational hegemonic feuds, Buddhism in Korea places emphasis on enhancing participation for the cause of national welfare and security as well as for the propagation of Buddhist Scriptures among the people at large.

Confucianism. Confucianism was introduced to Korea in the course of the inflow of Chinese civilization. In 372 AD, Confucian schools were founded in the Kingdom of Koguryo to teach Chinese classics. As has been noted earlier, since the establishment of a national Confucian academy in the Kingdom of Silla in 682, the content of formal education in Korea consisted of Confucian and other Chinese literary classics well into the nineteenth century. The preeminence of Confucianism in Korean intellectual history was further enhanced by its adoption by the Yi Dynasty as the national ideology. Primarily a political ideology and a philosophical system of code of conduct, it tended to operate at the level of political, social, and individual behaviour. For nearly five hundred years before the advent of the present century, the encompassing character of the Confucian edicts, fortified by the extreme formalism and rigidity of the Yi Dynasty, tended to regulate every aspect of life to the smallest detail. Thus, while Confucianism came to be associated with the stagnancy of the latter part of the Yi Dynasty and its subsequent ignoble demise by the hand of Japanese imperialism at the turn of the century, the deeply ingrained Confucian code of conduct and social relations remains even to this day a major influence on the way Koreans think and act. This is the case even with those who belong to other religions or disdain Confucianism as a negative influence in Korean life. The Confucian emphasis on filial piety, family, respect for age, and great respect for education and learning still remain part of the Korean scene. Thus, while the latest figure compiled by the Ministry of Information and Culture puts the number of Confucian followers at some 4.7 million, this figure is at best deceptive. Many who have never explicitly heard of or studied the tents of Confucianism may be deeply "Confucian" in their perception of social conduct and human relations.

Christianity. Christianity was first introduced to Korea through

Shamanism. Shamanism, probably the first form of religious worship in Korea, is still prevalent and enduring even in the face of the more sophisticated organized religions. It in fact colours every form of religion, both major and minor. The Korean shaman is called MUDANG, and traditionally performed ceremonies invoking the tutelary spirits of things and places considered sacred in order to ensure good luck, or to ward off disease and misfortune. These shamans are still found in both villages and, occasionally, in big cities, though their number and influence have been declining in recent years. Their services are sought sometimes even by members of other established religions. Confidence in the powers of the shaman never amounted to a religious cult, and therefore, there is no way of determining the number of believers. While adherents to this animistic form of fatalism and superstition can definitely be said to be decreasing in number, their pattern of behaviour tends to influence the forms of other established religions.

Buddhism. The oldest and largest of the formally organized religions in Korea is Buddhism. It was introduced to Korea around 372 AD by monks who came from India and China. After some initial opposition, Buddhism became the state cult of the old Silla kingdom (57 BC to 918 AD), and contributed significantly to its cultural development. Buddhism remained the state religion in Koryo, which emerged a few centuries after the Korean peninsula was unified by the Kingdom of Silla. Priests were appointed royal counselors and advisors, and sometimes enjoyed positions higher than that of state ministers, inevitably drawing charges of corruption. With the rise of Confucianism in Koryo and the adoption by the subsequent Yi Dynasty of Confucianism as the national ideology, the explicit and prestigious influence of Buddhism declined. Driven into remote monasteries, its beliefs at the common plebeian level were mixed with native shamanism and integrated into a shamanistic polytheism. Nearly every Buddhist temple has a side-shrine dedicated to the "mountain spirit" or other local deities. It is in this syncretic form that Buddhism struck deep roots in the minds of the common people of Korea.

According to official statistics compiled by the Ministry of Culture and Information, Buddhism has some 12 million followers, nearly 20,000 monks and nuns and 2,355 temples as of 1 October 1975. In 1975, Buddha's birthday was designated a public holiday for the first time in Korea. The Buddhist educational system in-

at more than 16,000. Presbyterians number about 1,600,000 constituting the largest Protestant order in Korea. Methodists follow with some quarter of a million followers. There are a total of 79 Protestant denominations represented in Korea, including Baptist, the Church of Holiness, the Seventh-Day Adventist Church, the Mormon Church, the Episcopal Church, the Quakers and Jehovah's Witnesses.

The influence of the Protestant Church in the modern development of Korea has been pervasive and important. The Protestant churches operate seven universities, 14 theological seminaries, and 53 secondary schools for boys and girls. Their Bibles have further been printed in Hangul from the beginning, thus contributing not only to the revival of the Korean alphabet in twentieth century but also to the enlightenment of the general public. They have also contributed decisively to formation of national consciousness during the Japanese colonial period: of the 33 signatories of the Declaration of Independence in March 1919, 16 were Protestant Christians. Indeed, the Samil Movement, a protest movement against the Japanese domination of Korea, can be said to have centred around the school and churches of the Protestant denominations. Furthermore, the Protestant churches did pioneering work in social welfare and today operate a total of 525 social welfare institutes, including nursery school and old people's homes.

Chundo-gyo. In the wake of the impending disintegration of the Confucian political and social order during the latter part of the nineteenth century and the early part of the twentieth century, many new religions mushroomed. Some of these were nationalistic, while others were simply heretic deviations of Buddhism or Christianity. The most important of these indigenous religious movements was Tonghak Movement, or, as it came later to be called, Chundo-gyo. The movement drew its inspiration from both historical Korean experiences and the currents of modern reforms. Choe Che-u, the founder of the movement, began preaching his creed, proclaiming for the masses the life of liberty and equality. In 1904, Archpriest Son Pyong-hui formally proclaimed the establishment of Chundo-gyo. Chundo-gyo grew as a part of the anti-Japanese movement subsequently. Today it claims about 800,000 followers, and has 1,600 clergymen and 140 churches with 146 local chapters in major cities and provincial areas.

There are a number of minor religious sects. The most important

publications brought in from China during the seventeenth century. Since the latter part of the nineteenth century, it found a particularly fertile soil for missionary endeavours in Korea. Although only about 10 per cent of the population are Christians of various denominations, Christianity has had an influence in modern Korea out of proportion to its membership. After the severe prosecution of the Catholic church in mid-nineteenth century Korea ended, missionaries were welcomed, in part because they brought with them Western education, medical care, and the ideals of emancipation of women and of modern democracy. During the colonial period, they sometimes provided a rallying point for anti-Japanese independence movements. Today, the businesses and professions include a large proportion of Christians, since a significant portion of the higher education for Koreans during the colonial period was in the hands of Christian colleges. Pioneering work in such fields as social service, youth welfare, labour movements, medical care and so forth are still associated with Christianity, whether undertaken by foreign missionary groups or local religious organizations.

Catholicism was first introduced to Korea in 1783, when the first Korean Catholic priest was ordained in China. He returned to Korea bringing with him the Bible in Chinese translation and began spreading the new teaching among the Korean people. Despite severe persecution during the succeeding years, the Foreign Missionary Society in Paris and the Maryknoll Society sent a stream of missionaries beginning in 1836 to build churches, monasteries, schools and hospitals. Today, the Catholic church has some 1,012,000 followers, 4,000 clergymen and 470 churches. It runs about 60 educational institutes, including colleges, secondary and primary school, and some 70 other organizations including hospitals and philanthropic groups.

The first Protestant missionary to come to Korea, one Karl Kutzlaff of Germany, landed in Korea in 1832. After a period of persecution, missionaries of various denominations began their work in earnest with the opening of Korea to the outside world in 1882. The dissemination of Christianity was unusually rapid. The Protestant churches kept growing in number and influence. By 1930, members of the Korean Methodist Church numbered 23,300, and that of the Presbyterian Church 125,800.

The latest statistics puts the number of Protestant Christians in Korea at a little more than 4 million, and the number of churches

3 Higher Education in the Republic of Korea

Typology of institutions of higher learning

Education in Korea is intimately connected with the tradition of Confucian learning. Historical records show that the content of formal education in Korea since its establishment about two thousand years ago has consisted well into the late nineteenth century primarily of Confucian classics and Chinese literature. This was true even during the period of great Buddhist influence. Not only in the variously designed primarily state-operated educational institutions for training government officials, but also in the privately-run schools, the Confucian classics and Chinese literature were prominent.

Confucianism thus gave the Koreans a deep-rooted respect for scholarship and learning. However, it also established the tradition of associating learning with the state and public service through the practice of recruiting the higher state officials from the ranks of learned people. While this tradition produced an illustrious list of scholar-bureaucrats of high calibre, it also tended to strengthen the tendency to view all scholarship and learning as means to a successful civil service examination and thus as the key to worldly advancement. This junction of scholarship and worldly advancement in part explains the phenomenal growth of education, especially of higher education, once the class restrictions were abolished.

Modern education was first introduced to Korea by Christian missionaries in the 1880s, when a number of missionaries of various denominations established themselves in Korea and began building modern schools as part of their missionary activities. A missionary group of the North Methodist Church of the United States opened the first missionary high school, Baejae, in 1885. The school with its new educational philosophy and modern curriculum is generally regarded to have been the pioneer of modern education in Korea. A Presbyterian group established another boys' high school in 1887, and the first girls' high school opened its doors in 1886. As for higher education, Sungsil College, the forerunner of Sungsun

of these is perhaps the Unification Church led by Moon Sun Myung. It is growing at a fast pace both at home and abroad, although it continues to draw criticism from conservative church circles, which see in it a cult based on sexism. There is also Shoka Gakkai, a Buddhist sect of Japanese origin, which began to spread in Korea after the normalization of relations with Japan in 1965. There are also some 3,000 followers of the Mohammedan religion.

run institutions (cf. Tables 2 and 3). At the time of liberation, there were 26 institutes of higher learning in all of Korea. When graduate schools, most of which are attached institutions at universities, are discounted, the number of institutes of higher learning increased seven-fold during the thirty-year period.

TABLE 2. *Geographical Distribution*

<i>Area</i>	<i>No. of Institutions</i>
Seoul	36
Pusan	6
Kyonggi-Do	4
Kangwon-Do	4
Choongchung Buk-Do	3
Choongchung Nam-Do	4
Jeonra Buk-Do	3
Jeonra Nam-Do	3
Kyungsang Buk-Do	5
Kyungsang Nam-Do	3
Cheju-Do	1
Total	72

TABLE 3. *Graduate Schools*

	<i>National</i>	<i>Private</i>
No. of Institutions at Graduate Level	11	33
No. of Students in Master's Course	2,716	5,999
No. of Students in Doctoral Course	1,002	1,484

The combined enrolments at the nation's institutes of higher learning stood at 235,147 as of the end of 1975. Of these, 3,787 were enrolled at junior colleges, 12,291 at teachers' colleges, 11,200 at various graduate schools, while the rest, 208,986, were enrolled at four-year colleges and universities (cf. Table 1). The figure represents a 30-fold increase when compared with mere 8,000 students enrolled at various institutions of higher learning in 1945, of which only one, Keijo Imperial University, the forerunner of the Seoul National University, was a university.

Shifts in emphasis in higher education

The latter half of the sixties and the early years of the seventies

University, was founded in Pyongyang in 1906 and Yonhee College the forerunner of Yonsei University, in Seoul in 1905, both as missionary foundations.

Korea's school system is divided into elementary school, secondary school and college-university. Under the Constitution, elementary education is free and compulsory. Secondary education consists of three years of middle school and another three years of high school. In addition, there are two-year vocational schools and three-year technical schools.

Higher education includes universities, colleges, junior colleges, teachers' colleges and graduate schools attached to the universities. With the exception of medical studies, which take six years, undergraduate courses are completed in four years, while masters and doctoral courses take minimum of two years each.

TABLE I. *Colleges and Universities*

	No. of Institutions	No. of Students	No. of Teaching Staff
National	14	56,270	3,401
Public	1	560	71
Private	57	152,156	6,608
Total	72	208,986	10,080

SOURCE: *Hanguk Kyoyuk Yungam*, Korea Education Annual, 1975-1976.

Quantitative increase in higher education

Education in Korea has seen a phenomenal growth in quantitative terms during the last thirty years following Korea's liberation from the Japanese colonial rule. The total registration in various levels of schools showed a six-fold increase to the present 8.7 million persons from 1.4 million in 1945. It is in the higher education that the growth has been most striking.

As of the end of 1975, there were 72 four-year colleges and universities, 82 graduate schools, 16 two-year teachers' colleges, 10 two-year junior colleges and 87 vocational and other specialized junior colleges. About two-thirds of the nation's institutes of higher learning are privately run. More than half of these are located in Seoul and Pusan, Korea's two major cities. Most of the privately run universities are located in big cities, while the colleges and universities located in provincial towns and cities are mostly state-

upgrade the quality of higher education was the adoption of the state-administered qualifying and physical tests in a province or a city where the school they wish to enter is located. The board of education of each province is empowered to pick qualified college applicants up to 200 per cent of the area's combined college enrolment quotas. The new system prohibits applicants qualified in one area from applying for admission to schools in another area, thus making more difficult the exodus of students from rural to urban areas where more prestigious institutions are located. The new college entrance examination system allows each college or university to have 20 to 50 per cent of each applicant's total examination score on the result of the State preliminary tests. In 1971, a general appraisal committee was formed to review the impact of the preliminary entrance examination on the quality of higher education. The committee found that the new system has made significant contribution towards improving the quality of incoming college students, and recommended continuation of the new system with some modifications.

In 1973, ten universities and colleges, including some of the major private universities such as Korea and Yonsei, were designated "pilot colleges" where a number of reforms were to be carried out either in package or individually. Perhaps the most important of these reforms was the proposal to admit incoming students not into departments but into areas. Thus, a student would be admitted not to the Department of Chemistry but into the Natural Science Area, not into Economics but into Social Science. Corollary to this measure, it was also proposed to abolish the fixed quota system for departmental majors. Students admitted to a given university or college would be allowed to choose his departmental major toward the end of his first or second year. The credit requirements for majors have been considerably lowered in order to allow students to explore their intellectual interests in other fields which have close relationship to their major field. The reduction in the credit requirements goes hand in hand with the system of minors and double-majors, which some of the pilot universities have instituted.

Another far-reaching reform in higher education announced in 1974 was the honours programme for outstanding students. Under this scheme, a student may, on non-compulsory basis, graduate from universities and colleges in less than the normally required

represent watershed years as far as the direction and quality of the Korean higher education is concerned. The unpreceded growth and expansion of Korea's higher education that we noted earlier took place largely without philosophical direction or integral planning. While this rapidly expanding higher education has contributed a great deal toward providing the trained human resources needed in building a newly independent nation, a lack of clearly formulated goals and the attendant lack of educational planning allowed some of the undesirable traditional forces free rein in shaping the direction of development in higher education. Among some of the specific consequences were: the proliferation of low-quality colleges unrelated to any national or social need; the predominance of liberal arts, law and commerce education; proliferation of the academic proletariat; the absence of division of functions between State-supported institutions and private institutions, and even between urban and rural institutions.

Gradual modernization of the Korean society and the spread of a rational mode of thinking have fostered a measure of critical sense in matters of education as well. The eagerness for education could no longer be satisfied by sub-standard education. On the part of policy planners, the trial and error of the early economic efforts and the consequent success had given them a self-conscious developmental attitude, and a certain amount of planning in higher education began to emerge toward the latter half of the sixties.

The Charter of National Education was proclaimed in December, 1968. A document designed to serve as the philosophical foundation of Korean education, it became the basis of a new educational policy at all levels. The major goals of the policy are: (1) to develop a heightened sense of national identity through emphasis on uniqueness of the Korean cultural and historical tradition; (2) to develop a new understanding of human relations through education in public ethics emphasizing the virtues of diligence and cooperation; and (3) to encourage scientific and technical education based on experiment-and practice-centered education. A new emphasis was thus given to the teaching of national (cf. Annexure I) history to recover what was described as a "lost" nationality in education. At the same time, the government urged all levels of schools to give priority to practical education with a view to producing human resources needed for the nation's industrial development.

One of the earliest and most important of the measures taken to

curricula for all levels of schools were put into effect in 1973. Korean History, National Ethics, and Military Training were added to the list of required courses in the area of general studies in all colleges and universities. Korean History was added because it was felt that an accurate understanding of one's own national history is an essential part of a citizen's education. The Compilation Committee of Korean History was formed with the view to restoring objectivity to Korean history. The course on national ethics deals mainly in political theories in Korean history, democratic theories and critical appraisal of the Communist theories of history, society and nation. Military training was designed to equip the students for national emergencies when they would be called up to defend the nation from external aggressions. Despite some initial opposition, which led to some violent student unrest, the programme has been adopted by all colleges and universities.

Higher education and employment

Despite the close association between higher education and social mobility in the minds of the Korean people, a college diploma does not necessarily guarantee a job, as statistics show. As the table indicates, there were 33,160 graduates of colleges and universities in 1975. Of these, only 19,635, or approximately 60 per cent of graduates, found gainful employment. The service sector claimed the largest portion of the graduates (cf. Table 4) with 11,236

TABLE 4. *Employment of Graduates*

Year	No. of Graduates	Those Proceeding to Higher Degrees	Employed
1966	22,166	1,070	10,084
1967	22,338	990	10,123
1968	16,974	1,169	13,938
1969	22,684	851	12,659
1970	23,515	1,091	13,743
1971	27,168	1,401	14,448
1972	29,544	1,684	15,078
1973	28,755	1,602	16,139
1974	30,153	2,024	17,227
1975	33,610	2,179	19,635

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four years should his academic record warrant it. The new system was designed primarily to create a fresh academic atmosphere at the campuses in which those students who devoted themselves to academic pursuits could graduate in two and half years at the earliest.

Most of the universities and colleges have now been designated "pilot" institutions, and have adopted some or all of the reform measures mentioned above.

The status of university and college professors was radically altered with the abolishment of the tenure system in 1976. All professors in various institutes of high education, including those who have already attained the tenure, were screened by the pertinent intra-mural committees on the basis of publications, activities in learned societies, student counselling and compliance with the various education-related laws and status—318 or 2.9 per cent of the total of colleges and university professors in Korea were denied reappointment, while the rest were reappointed for a limited term, ranging from the minimum term of one year for a university assistant to the maximum of ten years for full professors. While this contract system has undoubtedly contributed to intensification of academic activities among professors, fears have also been expressed that it would be in the long run adversely affect academic freedom and genuine creativity.

Inclusion of new subjects

Universities and colleges are in principle free to choose their own curriculum. There are however some subjects in the field of general studies that are required of every college curriculum. In this category of required courses, which must be completed by every student before he becomes eligible for graduation, all Korean language, Korean cultural history, national ethics, military training, and physical education. In 1969, a three-year plan was set up for a complete revision of the standard curriculum. The curriculum used previously at all levels of educational institutions was put into effect in 1964. Since that time, however, the social, political and economic context of education has been fundamentally altered by developments brought about by the rapid economic development of the sixties, the nascence of national consciousness in all walks of Korea life, and the need for greater ideological consensus following the dialogue with the Communist north Korea in 1972. The revised

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2,901 persons (cf. Table 6). The rate of employment shows considerable variation according to the area of specialization as well as according to the "quality" of the institution. The figures show highest

TABLE 5. *Rate of Employment*

Year	1966	1970	1975
Rate of Employment	45.5%	58.4%	58.4%

SOURCE: Hanguk Kyoyuk Yungam, Korea Education Annual, 1975-1976.

TABLE 6. *Graduates and Employment*

	Graduates	Employed	Rate (%)
Languages	2,764	1,469	53.1
Arts	1,897	781	41.2
Humanities	1,351	652	48.3
Social Sciences	7,622	4,352	57.1
Physical Ed.	533	280	52.5
Natural Sciences	3,026	1,505	49.7
Engineering	7,202	4,213	58.5
Medicine	2,600	1,778	68.4
Agriculture	2,605	1,119	43.0
Fisheries	459	396	86.3
Education	4,091	3,088	75.5
Total	33,610	19,635	58.4

SOURCE: Hanguk Kyoyuk Yungam, Korea Education Annual, 1975-1976.

rate of employment in the fisheries and maritime sector, followed by teaching medicine, engineering and social sciences. The rate of employment for graduates of Seoul National University, generally considered to be the premier institution of higher education in Korea, is 87.3 per cent and 90.4 per cent for 1970 and 1975 respectively, while the corresponding figures for Sung Kyun Kwan University, one of the private universities, are 38.5 and 75.9 per cents respectively (Tables 7 and 8). The overall prospects for college and university graduates in the job market have improved somewhat since 1966, when the rate of employment was slightly higher than 45 per cent, while the figure for 1975 shows 58.4 per cent rate of employment (cf. Table 5).

TABLE 7. Employment Statistics: Seoul National University

	1970				1975			
	G*	E	U	H	G	E	U	H
College of Engineering	474**	150	38	72	721	246	24	152
College of Agriculture	284	185	5	29	256	119	20	31
College of Humanities					161	40	30	35
College of Social Sciences					205	95	3	73
College of Natural Sciences					194	42	13	96
College of Liberal Arts	378	88	97	95				
College of Fine Arts	62	33	12	13	69	23	27	15
College of Law	152	53	70	13	169	13	80	71
College of Education	236	181			371	269		58
College of Commerce	200	155			29	102	70	1
College of Pharmacy	71	26			9	72	29	22
College of Music	85	41	35	5	111	73	13	22
College of Medicine	146	67	13	3	241	150	14	4
College of Dentistry	75	19	5	1	75	22		3
College of Home Economics						82	21	48
Total	2,163	998	275	269	2,829	1,212	273	641

TABLE 8. Employment Statistics: Sung Kyun Kwan University

	1970				1975			
	G*	E	U	H	G	E	U	H
College of Engineering	123**	26	46	19	299	233	29	14
College of Confucian Studies	9	3	2	1	24	11	8	4
College of Liberal Arts	179	58	73	20	216	89	93	23
College of Law & Politics	157	42	66	4	183	86	56	6
College of Commerce & Economics	399	179	138	6	266	247	9	2
College of Pharmacy	73	34	17	4	78	48	10	2
Total	940	342	342	54	1,152	733	270	53

*G: Graduates E: Employed U: Unemployed H: Higher Degrees.

**Figures in the horizontal columns do not tally, because those who have been drafted into military service have been left out in the tabulation.

SOURCE: Office of Student Affairs Song Kyun Kwan University.

Focus on research

The government has been subsidizing academic researches since 1966. Begun with 17 million won granted to 159 scholars in 120 different research fields, the amount of subsidies has been steadily increasing. The figure for the year 1976 stands at 470 million won, an almost thirty-fold increase since the beginning. It has, however remained almost constant since 1972, when the figure stood at 468 million won. The subsidy represents one of the tangible indications of the intention of the policy makers to upgrade the quality of higher education in Korea.

With growing affluence accruing from the rapid economic development of the sixties, a number of private and semi-private foundations of considerable significance have come into existence with the purpose of supporting academic research activities. One of the earliest and most important is the Sung-gok Foundation. It has been subsidizing academic researches on the scale of approximately 20 million won annually since 1969. Perhaps the largest of these foundations is Korean Traders Scholarship Foundation. In 1974, when the foundation began supporting research activities, the stipends amounted to 150 million won. In 1976, the total amount of subsidies stood at 300 million won, a two-fold increase within a three year period.

In an effort to enhance the function of social service of the university by ensuring a greater social and national relevance to academic research activities, the government has initiated in 1977 a new programme of research grants for projects with immediate policy implications. The Ministry of Education solicits a list of problems that require theoretical considerations and researches beyond the reach of normal bureaucratic machinery from various government ministries and agencies. This list of projects is then forwarded to various institutions of higher learning, to be carried out either individually or collectively. The first year's list includes such projects as "Restructuring of Agricultural Policy," "An Analysis of the Foreign Policy of the Carter Administration and Korean National Security," "The Global Arms Race and Security of Korea," "Organization of the Police Force in the '80s," "The Basic Direction of Consumer Protection," "Automation in Agriculture and its Effect on Agricultural Labour Force," "Reforms in the Primary and Secondary Education," and "National Goals and the Image of the Youth."

4 Seoul National University

Background information

Seoul National University owes its origin to the liberation of Korea in 1945. The event called for a complete reorganization and expansion of existing educational facilities in keeping with overall reforms for the establishment of a democratic nation. It was necessary to found a modern university to meet the large national demand for higher education. The idea was formalized by the Seoul National University Statutes which became effective as of 22 August 1946. The plan provided for the creation of Seoul National University through the merger of Kyungsung Imperial University and nine public and private vocational schools already in existence, as well as the creation of a graduate school and several new colleges. The ten basic units of the new organization included the College of Liberal Arts and Sciences, College of Engineering, College of Commerce, College of Education, College of Music and Fine Arts, College of Law, College of Medicine, College of Dentistry, and the Graduate School. The Graduate School was newly created, while the College of Liberal Arts and Sciences was reconstituted out of the arts division of the Faculty of Science and Engineering of Kyungsung Imperial University which was founded by the Japanese colonial authorities in 1926. Kyungsung Engineering College, whose predecessor, the Technical Institute, was founded in 1895, was amalgamated into the new university as the College of Engineering. Kyungsung Medical College, which was now reconstituted as the College of Medicine, was founded originally in 1899, while the College of Law and the Education grew out of the Judicial Training Institute founded in 1895 and Hansung Normal School founded in 1894 respectively. The newly-constituted Seoul National University had 6,146 students and 491 faculty and staff member, and they were accommodated on eight separate campuses.

The conditions however were not propitious for proper development of the new university. The liberation in 1945 was followed by the division of the nation by the 38th parallel line. The southern

part of the land was occupied by the United States armed forces, and the northern part by the Soviet Russian forces. The outbreak of the Korean war in 1950 was a tragic set-back for the new university. The capture of Seoul by the Communist forces necessitated two evacuations of the university to the southern part of the land and caused considerable personnel, administrative and academic disruptions.

In 1953, the university returned to Seoul to recover its physical plant and begin again. Over the years since, Seoul National University has been growing and upgrading and quality of educational and research activities. It has added six colleges, three graduate schools, and 11 research institutes, numerous departments and other facilities. In this process there have been many transfers and regroupings of departments, exchanges of physical facilities, and various administrative changes. Each individual organ had its own administrative machinery to conduct local administration.

The amalgamation of Kyungsung Imperial University and other vocational schools in 1946 had been only administrative, and well into the early seventies, the university continued to function at sites which were scattered in and around the city of Seoul. The headquarters of the university was situated about a mile northeast of the heart of the city of Seoul, and most of the colleges and other entities were clustered in the main site or across the street in the medical complex area. The College of Music, however, was 2 km to the south; the Colleges of Education and Home Economics about 5 km to the east; the College of Commerce and the Graduate School of Business Administration 8 km to the northeast; and the College of Engineering and General Studies were 15 km from the main campus. Moreover, the College of Agriculture was located 40 km south of the main campus in Suwon. This separation of facilities was the cause of the many problems and deficiencies. Similar courses were being offered in different colleges and locations, resulting in waste of resources and unjustifiable differences in the content of the courses offered. Such a separation also tended to retard cross-fertilization of disciplines.

The physical dispersion had also hindered the development of Seoul National University as a truly integrated university with unified goals and educational ideas. It continued to function rather as a loose association of schools and colleges. Adding to these difficulties was the sheer obsolescence of the physical facilities. Many

buildings were destroyed during the Korean war, and many structures had to be either newly built or reconstructed. Old age, poor functional design, and inappropriate use of space were some of the problems that had to be dealt with.

The ten-year integration and development plan

In order to build a truly integrated university and to resolve these physical problems, proposals were set forth to reorganize and unify the existing university. After an extended series of studies and revisions, the ten-year integration plan of Seoul National University was approved as a national policy by the government in April 1968. The basic points of ten-year integration plan were:

- (1) All existing colleges were to move to a new campus; except for the Colleges of Medicine and Agriculture which were to remain at their original sites.
- (2) The planning, design and construction of the campus would span a ten-year period from 1968 to 1977.

(3). Funds for the project were to come from (a) sale of existing properties of Seoul National University, (b) government appropriations to subsidize the annual SNU budget, and (c) foreign assistance for the purchase of equipment.

Several sites were considered for the new campus. After nearly two years of deliberation by the university and the government agencies concerned, President Park Chung-hee officially chose the present site at Kwanak Mountain, in March 1970. The campus site contains a very ample 3.5 million square meters of land and is adjacent to the existing College of Agriculture experimental forest of some 17 million square meters. This brings a consolidated tract of over 20.5 million square meters under university ownership. It is located 15 km from downtown Seoul south of the Han River in keeping with Government policy to direct growth south of the river.

The site, formerly a golf course, has unspoiled natural surroundings of great visual beauty. Immediately after selection of the site, the surrounding property was zoned park, educational, or limited development areas in order to protect the new campus from encroaching development. The existing approach road was widened and a new artery linking the campus with Seoul's urban area was constructed.

The Construction Headquarters was established in August 1970, to execute the ten-year Development Plan. A high-level committee

was set up with the Prime Minister as Chairman, and a Planning Committee was appointed in the university to act as an advisory body to the President of the University. The Subcommittee on Academic Planning was appointed consisting of the seven faculty members. In a ten-month period between May of 1970 to February of 1971, the Subcommittee drafted a new academic plan, and the SNU Master Plan was drawn up on the basis of this draft.

The academic plan

In general, the goals of the Academic Plan are to bring about a centralization of many administrative functions and to create a more cohesive, integrated academic institution. This is to be accomplished through a unification of administrative and budgetary systems hitherto separately handled by individual colleges, a streamlining and integration of the academic structure, the merging of various departments to eliminate duplication and inconsistency of courses and facilities, centralization of library facilities, and less specialization and more exposure to varied disciplines for students in early years. The bringing together of twelve colleges on one campus was expected to accomplish many of these goals of the academic plan which had hitherto been impossible. Interdisciplinary contacts and learning among students and faculty will be greatly encouraged through an integration of academic facilities and a residential environment.

Reflecting the academic plan, the Master Plan sets aside three major building areas for the humanities, the natural sciences and engineering. Interspersed are facilities for specialized schools such as music, fine arts and pharmacy. All the academic construction areas are close enough to each other so that high utilization of class rooms and lecture halls is achieved, and at the same time there is sufficient room for their specialized facilities. Interdisciplinary and multi-disciplinary activities are also fostered by this proximity and shared use of facilities.

The three precincts are linked to a university centre which is the hub of the campus. The centre included the main library, administrative offices, and student services building. Although the entire campus consists of 900 acres, the major academic activities and facilities used by 12,000 students, 1,400 faculty members (including teaching and research assistants) and about 1,000 supporting staff are contained within a seven-acre area, whose perimeter is about

1,000 feet from the main library.

The first phase of the Integration Plan was completed in early 1975, and the Colleges of the Humanities, Social Sciences, Natural Sciences, Business Administration, Education, Law, Home Economics, the Graduate School, the Graduate Schools of Public Administration and Environmental Studies were moved to the new Kwanak Campus. At the time of this writing, the Kwanak Campus accommodates three graduate schools, ten colleges, 19 research institutes and such supporting facilities as the University Library, the Royal Library of Yi Dynasty, Auditoriums, Faculty Club, Student Centre, Museum, Gymnasium, Student Housing. A constituent college included in the Integration Plan but not yet integrated is the College of Engineering. It is expected to move to the new campus by 1978. The Colleges of Medicine and Dentistry, however, will remain in the present medical campus in downtown Seoul, while the College of Agriculture will remain in the present campus located in Suwon. Most development today lies north of the Han River. Commercial areas are located throughout the central city and along nearly all major roads leading from the centre. However, reflecting the government policy to encourage development south of the Han River, there has been a phenomenal residential growth extending and wrapping partially around the Kwanak Campus. There has also been a considerable industrial growth northeast of the new campus towards the river. The urban development is now virtually continuous all the way to the Kwanak campus, and the population centre is expected to shift south towards the campus. The green area and limited development zone, however, will buffer the campus from most development, and an educational zone will control the character of development which will be allowed to reach the northern edge of the university property.

Administrative structure of Seoul National University

All institutions of higher education, whether national or private, come under the direct or indirect supervision of the Ministry of Education. The Ministry of Education sets, in accordance with the Education Law and related presidential decrees and government regulations, the minimum standards for admission and graduation, faculty, curriculum, physical plant, educational facilities, and so forth. The financing of national colleges and universities is primarily the responsibility of the national government and public insti-

tutions the responsibility of local governments. Tuitions and entrance fees collected from students at these institutions meet only a small part of the total expenditure.

As a national university, Seoul National University comes under the direct supervision of the Ministry of Education. The final authority to decide or approve appointments (or) personnel, curriculum, operations, budgets, etc., rests in the hands of the Ministry of Education. The operating budget of Seoul National University is a part of the budget of the Ministry of Education. While in the matter of faculty appointments the university retains a considerable degree of autonomy, the administrative staff remains formally a part of the bureaucratic structure of the Ministry of Education. The university thus has to maintain a constant contact with the Ministry in order to ensure its smooth operation. This form of government for Seoul National University has been felt to be unsatisfactory, especially by the university community itself. It has been felt that, while Seoul National University, as a national university, should remain in the domain of public interest and control, it was most important to define the meaning of public interest and public control which would be acceptable to both the nation and university. The direct control by the Ministry of Education was and is seen as coming dangerously close to interference with the autonomy of the university. It also tends to contribute to waste and inefficiency, since it removes the decision-making authority from the site of operation and places it in the hands of a gigantic bureaucratic structure. Far-reaching reform measures were proposed in the Academic Plan regarding the governing structure of the university. Most important of these proposals was the creation of the Board of Directors to serve as the highest governing body of the university. This would have removed the university from direct control by the Government, although the presence of the Prime Minister and the Minister of Education as the chairman and vice-chairman respectively of the Board would have ensured it a considerable influence. The Board of Directors was to be counterbalanced by the Faculty Senate, which was to have the authority to recommend the five of the 15 members of the Board of Directors.

These reform proposals were to a large extent ignored in the process of legislation, and the governing structure of Seoul National University remains substantially what it was before the Integration Plan was put into effect. Its formal pattern is a hierarchical network

consisting of a president, a vice-president, deans and directors, department chairman, and heads of auxiliary organizations such as the University Library, the University Museum and research institutes. Other instances which play a role in the decision process are university and college councils and committees. Their role however is primarily advisory.

President. The chief executive of the university, the president has over-all authority and responsibility for the various activities of the university. Appointed to a four-year term by the President of the Republic, he is assisted by a vice-president.

Deans and Directors. The deans of four graduate schools and fifteen colleges oversee the academic, administrative and student affairs of the individual colleges and graduate schools. They are appointed to a two-year term by the president and assisted by not more than two assistant deans. The Dean of Academic Affairs deals with instruction, examinations, degrees, admissions, dismissals, and academic researches and similar affairs. The Dean of Student Affairs is concerned with the policies and activities regarding student guidance, interests and welfare. All deans are appointed from among the faculty members. The Directors of Business Affairs and Utility Operations are appointed from among the bureaucrats of the Ministry of Education, although they answer directly to the President of the university.

Department Chairmen. They are appointed by the President of the university from among the professors in the respective departments.

The University Council. The Council derives its authority from the provision defined in the Education Bill, which prescribes the establishment of the councils in national universities for consideration of important matters concerning management of each institution. The members, the number of which may not exceed 27, are appointed by the President and may be from the university as well as outside persons. The Council meets at the request of the president or at the request of more than three Council members, the serves an essentially advisory function.

The Council of Deans. The Council is set up as an advisory committee to the president and considers over-all academic affairs of the University. It is composed of the president, who presides it, vice-president, deans of colleges, graduate schools, and academic

and student affairs, and director of business affairs and utility operations.

The Faculty Council. Each individual graduate school and college has a faculty council composed of faculty member belonging to each respective organs, and it deliberates on the academic and student affairs of the individual college or graduate school in an advisory capacity to the Dean.

Reorganization

In accordance with the organizational changes proposed in the Academic Plan, the university was reorganized in early 1975 as a part of the ten-year Integration Plan. The principles operative in the reorganization were:

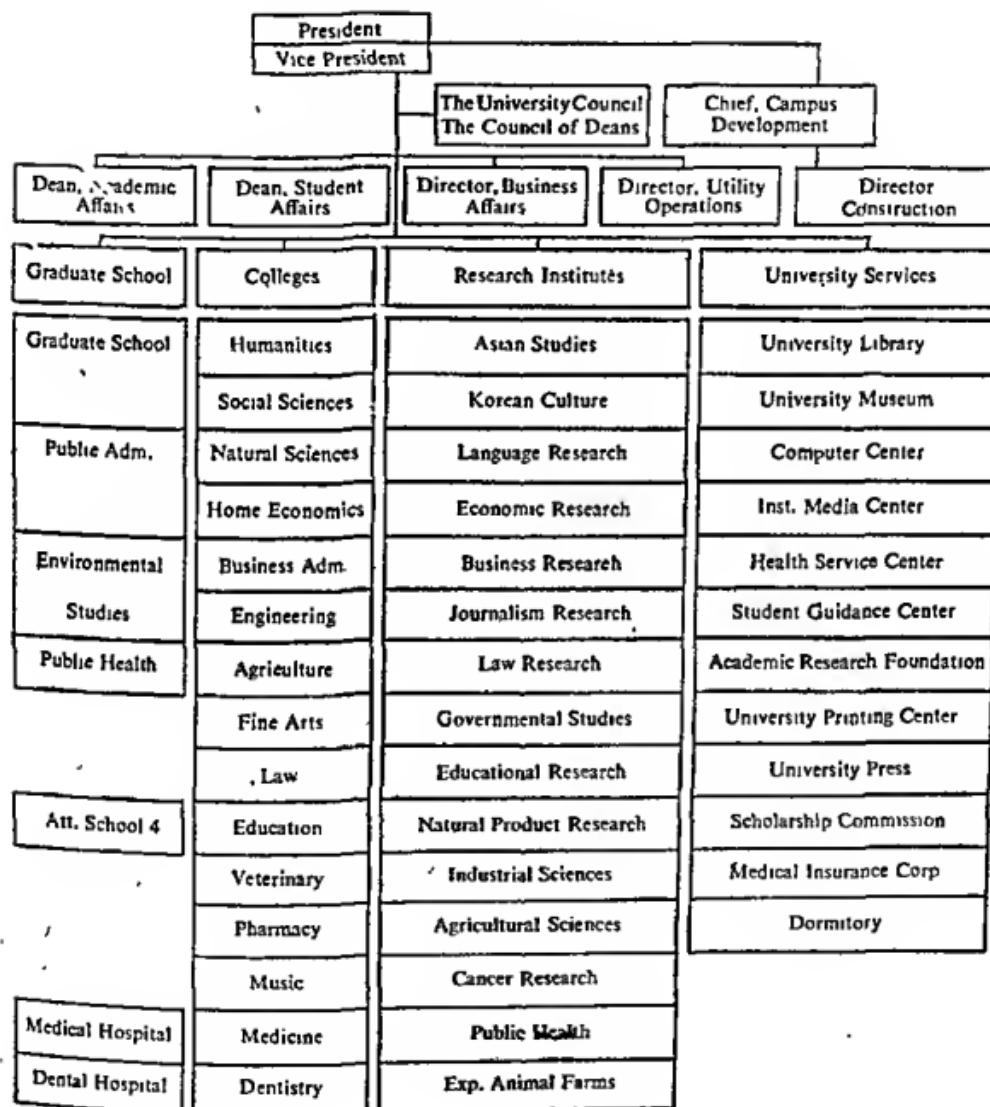
- (1) Readjustment of the status of colleges and schools for coherence and efficiency
- (2) Elimination of duplication of organizing faculty according to academic disciplines
- (3) Integration for departments in the same general areas
- (4) Unification of different levels of instruction into one department of each discipline.

There are now four graduate schools (the Graduate School, the Graduate Schools of Public Administration, Environmental Studies, and Public Health), 15 colleges (the Colleges of Humanities, Social Sciences, Natural Sciences, Home Economics, Business Administration, Engineering, Agriculture, Fine Arts, Law, Education, Veterinary, Pharmacy, Music, Medicine, and Dentistry), 15 research Institutes, and various university services including the University Library, Computer Centre, University Press and dormitories (cf. Table 9).

Dominant values and norms

Seoul National University is generally acknowledged to be the premier institution of higher learning in Korea. The reasons, however, for its pre-eminence are far from clear. Aside from the fact that Seoul National University consistently obtains the nations' most outstanding group of high school graduates, the pre-eminent position of Seoul National University derives more from the general cultural and social heritages of long-standing in Korea rather

TABLE 9
ORGANIZATION CHART



than from the inherent strength of the university. One of these heritages is the Confucian tradition of associating advanced learning with the state and public service. Keijn Imperial University, the only university in Korea under the Japanese occupation, to some extent continued this tradition. While most of the students were Japanese residents in Korea, a handful of bright Korean students were admitted on a fiercely competitive basis. Seoul National University, when it was founded in 1946, inherited some of the elite aura of the Imperial University, and top high school graduates went to Seoul National University. Thus, the graduates of Seoul National tended to occupy many of the important positions in all walks of national life. Association of higher learning, especially in the form of education at Seoul National University, with social mobility has been one of the constants in the educational development for the last thirty years. Many in Korea feel that only by going to Seoul National, will they have the best prospect of securing high positions in various fields in Korea.

Despite this association of learning with the state and public service, a highly "puristic" and rigid perception of the role of higher learning seems to be dominant in the university community. It is often said that a large public university must assume at least three primary functions: teaching, research and public service. The Academic Plan, which to a significant degree reflects the opinions of the faculty and the students clearly opts for a relatively "pure" academic programme, while placing only secondary emphasis on the immediate demands of society. These are the words of a faculty member who had a leading role in drawing up the plan:

We feel strongly, however, that our primary objective is, or to be more precise 'purely academic', and the function of public service must be subsumed under the academic objective. We consider the greatest service the University could offer to the society and nation is through the achievement of the most effective teaching and research at the university.¹

While acknowledging the responsibility of a public university to

¹Lee, Hong Koo, "A Summary Report on the Academic Planning and Development of Seoul National University," *Proceedings of International Conference on University Planning and Development*, (Seoul, Seoul National University, October, 1971), pp. 150-151.

respond to the demands of a society which go beyond the traditional university functions of teaching and research, the university is perceived as having the more permanent function of preserving human knowledge and communicating and teaching it to younger generations. It is felt (that) universities other than Seoul National could best put primary emphasis on meeting the immediate needs of society, such as training of more engineers, scientists and managers, while Seoul National University could best marshal its energy and resources to preserving the tradition of pure learning in Korea. Respect for learning has always been high in Korean culture throughout two thousand years of recorded history. This tradition was further strengthened when Confucianism was adopted as the state ideology during the Yi dynasty. The Confucianism thus adopted, however, was Neo-Confucianism of Chu Hsi provenance, which tended to be abstract, formalistic, and metaphysical compared to the predominantly practical-ethical character of the original Confucianism. The tendency was very strong to regard learning as an end in itself, and not just a means for other ends. While times have brought some modifications to this heritage, the intellectual community at Seoul National University, whether rightly or wrongly, considers itself the heir to this tradition of pure learning in Korea.

There exists further, on the parts of both faculty and students, a sustained and passionate concern for safeguard of academic freedom at Seoul National University. Dissatisfaction at the present mode of governing the University, which leaves the Ministry of Education in the position of control and supervision, has already been mentioned. In the process of drawing up the academic plan, the sub-committee on academic planning took the position that the initial requirement for advancing the cause of academic freedom is to give the university the power to define autonomously what should be the true meaning and substance of academic freedom. To this end, the establishment of a strong and effective faculty senate had been proposed, although, as mentioned earlier, the plan was not actualized in the final stage of implementation. Indeed, a significant segment of both faculty and student took the extreme view that the faculty senate should be the highest governing body of the university. The dissatisfaction in this area of the university governance continues to be a source of tension between the administration and the government, on the one hand, and the faculty and students, on the other. "When a university abandons the right to put forward its own conception of

academic freedom and to express its will to defend such freedom, it ceases to be a respectable institution of learning."²

The last point to be mentioned is the tradition of strong political activism among the students. Inheriting in part the Confucian tradition of petition by the students of Sung Kyun Kwan, the official institution of higher learning during Yi dynasty and the tradition of opposition to state-directed activity under Japanese rule, the students and intellectuals feel themselves the custodian of the well-being and integrity of democratic legitimacy. Given the pre-eminent position of Seoul National University in the intellectual life of the nation, the voice of its students and faculty has been particularly potent. Although the student activism has become somewhat subdued with the expanding economic prosperity and the turn toward greater authoritarianism the nation took during the early seventies, the self-perception of the intellectual community of Seoul National University as the custodian of political and social integrity of the nation continues to be the source of tension and ambiguity vis-a-vis the political authorities.

²Lee, *op. cit.*, p. 157.

5 Generation, Dissemination and Utilization of Knowledge

The four departments selected, the Departments of Korean History, Economics, Chemistry and Civil Engineering, are studied on the execution of their functions of dissemination, generation and utilization of knowledge. In carrying out these studies, a questionnaire has been prepared for the professors in the respective departments to fill out (cf. Annexure I). Two of the four faculty members of the Department of Korean History, even of the twelve members of the Department of Economics, six of the twelve members of the Department of Chemistry, and eight of the nine members of the Department of Civil Engineering have responded to our enquete. Their responses were classified according to the three functions of generation, dissemination and utilization of knowledge. In addition, the perception of the respondents regarding their individual as well as departmental contribution to national development received a particular attention in our questionnaire. An interview-guide was also prepared for our researchers to use in interviewing assistants in the departments.

Since all incoming students of Seoul National University must complete the general education programme, that part of the undergraduate curriculum which is common to all four departments concerned will be described first.

The common curriculum

The undergraduate course of studies at Seoul National University is composed of four programmes: general education programme, specialization (or major) programme, minor programme, and teacher education programme. General education and specialization programmes are compulsory for all students, while minor and teacher education programmes are elective. The curriculum prescribes the kinds of subjects to be taken and the number of credit points for each kind. The subjects are classified into three main

categories: general education subjects, specialization subjects and general electives. The minimum of 140 credit points are required for the completion of the undergraduate course of studies.

Students are required to take 42 credit points from the general education programme. Korean Language, Composition and Writing, Korean History, Physical Education, National Ethics, and Military Training are compulsory subjects. The rest of the subjects in the general education programme consist of "tool-subjects" such as foreign languages and statistical methods, and introductory courses on major disciplines such as Introductory Philosophy or Introduction of Political Science. Selection of, and allocation of credit points for these tool and introductory courses vary according to the areas of study as well as by the departmental requirements. The departments provide standard programmes of study for general education. Students are allowed to take general education subjects at any stage of their undergraduate careers.

The credit point requirement for specialization programmes varies according to the area of study as well as departmental specialization, and also according to whether or not the student takes the minor programme. In general, the requirement for specialization subjects is 63 credit points, of which not more than 30 may be compulsory. For those who have elected minor programmes, the credit points required in major subjects is 48, of which not more than 30 may be compulsory, and in minor subjects 24, of which not more than nine may be compulsory. In the natural sciences area, the maximum number of compulsory major subjects is 40 (cf. Table 10).

Department of Korean History

The Department of Korean History antedates the formal establishment of Seoul National University; it had been established in Kyungsung University, as Keijo Imperial University was provisionally called with the downfall of the Japanese colonial regime, in December 1945. When Seoul National University was formally constituted in 1946, however, the Department of Korean History, together with the Department of Oriental History and Western History, was integrated into the Department of History. For practical purposes, however, it was maintained as a separate department, and formally regained its independence in 1969. It is now one of the 11 academic departments that make up the College of the Humanities.

TABLE 10. Minimum Requirement by Subject Categories and by Areas of Specialization

Areas of Specialization Subject categories		Humanities and Soc. Sciences	Natural Sciences
Gen Fd. Subjects		42	42
Specialization Subjects	major*	63(30)**	63(40)
	major***	48 (30)	48(40)
	minor	24 (9)	24 (9)

*For those not enrolled in minor programmes.

**Maximum credit points for compulsory subjects.

***For those enrolled in minor programmes.

SOURCE: *Curricula for Undergraduate Courses*, Seoul National University, 1976.

The department now has 52 candidates for the B.A. degree, 19 for the M.A. degree, and four for the Ph.D. degree. The department may admit a maximum number of 15 students every year from among those students completing three semesters of the general education programme. During the six-year period from 1970 to 1976, the department produced 111 B.A. degree holders, 18 M.A. degree holders, while two have received Ph.D. degree in Korean history. About 90 per cent of those who have received B.A. degrees are engaged predominantly in teaching (in high and middle schools) and journalistic activities (newspaper, magazines, and publishing), while the rest have gone on to study for higher degrees. Those who hold M.A. degrees all hold teaching jobs, some at universities and others at secondary schools. The two Ph.D. degrees have been conferred to professors in the department.

The department is presently staffed by four faculty members, three of whom are professors and hold Ph.D. degrees, while the other one is an assistant professor who has no Ph.D. Since the department must offer introductory courses on Korean history which are compulsory for all students of Seoul National as part of their general education programme, it must engage a number of part-time lecturers from outside.

Courses offered by the department for those majoring in Korean history include lectures and/or seminars on Korean historiography, ancient history, medieval history, modern history of Korea, metho-

dology of research in Korean history, economic history of Korea, history of Korean foreign relations, and Korean intellectual history. A student majoring in Korean history must take a minimum of ten courses or 30 credit points from these.

The community of historians specializing in Korean history is dominated by the graduates of this department. The Departments of Korean history in major Korean universities consist predominantly of graduates of Seoul National University. In 1967, the Association for Study of Korean History was organized under the initiative of those who had graduated from the department. A decisive impetus was given to modernization of methods in the study of Korean history with the publication the following year of the *Studies in Korean History*, a major scholarly organ in Korean history. The department also began publishing works by its faculty members as well as M.A. dissertations in the *Theories of Korean History*. Since its first publication in 1974, there have been two more publications.

An event of great significance for the department was the establishment of the Institute of Korean Culture in the University in 1969. The institute, the first director of which was a member of the department faculty, had published 17 monographs at the time of this writing. They have, by general consent, contributed not only to the strengthening of the theoretical foundation of the study of Korean history, but also to the systematization of Korean studies in general. The integration of the campus in 1975 has also brought a much-needed inter-disciplinary approach to the study of Korean history. Proximity of related academic departments enables a number of prominent scholars in such related areas as history of Korean music, Korean language and linguistics, and Korean studies of Chinese letters to hold lectures in the department, thus giving students a broader and firmer insight into the character of Korean culture.

Two of the four faculty members of the department who responded to our inquiry see the goal of the activities of the department as lying primarily in the promotion of a correct understanding of the history and cultural tradition of Korean people through a scientific systematization of Korean history. They both see the goal of their scholarly activities in the rectification of the understanding of Korean history which had been distorted by many centuries of Chinese influence on Korean life and more than three and half decades of Japanese colonialism. One whose area of specialty is in recent Korean history, attempts to gear his scholarly activities toward

clarification of the historical changes in the structure of the consciousness and the social structure of Korean people. He sees such activities as contributing to national development in so far as they help establish an ideological and social system of values needed for the modernization of Korea. While serving as the dean of the Graduate School, he has published two papers and one book during the last five years. His book on Korean history is widely respected and has been translated into English. He has served on a number of intramural committees on curriculum and research development within the University as well as on government committees for cultural development, such as the Committee on Promotion of National Culture. However, he has written "almost nothing" either for newspapers, magazines or other popular periodicals, has appeared neither on television nor on radio, and has attended no seminars nor given public lectures. Neither has he participated in any campaign designed to promote any specific cause either related or unrelated to his area of specialization. In short, his activity has been "purely" academic.

The other respondent, whose area of specialization is ancient Korean history, concentrates his studies on the clarification of the social structure of ancient Korean society and the intellectual patterns of ancient and medieval Korea. He sees his activities as contributing to national development by helping to establish a spiritual basis for understanding, and thus enabling Koreans to cope with their present realities through an adequate understanding of the history and cultural tradition of Korean people. While serving as the chairman of the department, he has published five papers and written two books during the last five years. Although he participates in seminars related to his area of specialization about once a month, he has written nothing for popular press organs, appeared neither on television nor on radio and served on no committees, either intra- or extra-mural. Here again one sees a "purely" academic orientation.

Department of Economics

There were two dominant streams when the Department of Economics was formed in the College of Commerce of Seóul National University in 1946. One was practical commercial training which formed the mainstay of curriculum in Kyungsung Commercial College, where only a minimum of economic theory was taught.

The other was the Economics Department of Keijo Imperial University, where Japanese professors, cut off from the main currents of international economic theories, were developing Fascist theories in justification of the Japanese exploitation of the Korean economy. Coexistence of the practical and the theoretical was the characteristic feature of the curriculum of the Department of Economics until Seoul National University was reorganized in 1975 for coherence and efficiency. Book-keeping, for instance, had been required of all economics majors. With the realization of the integration plan, the Department of Economics was reorganized as one of ten academic departments in the College of Social Sciences. Subjects of more or less practical nature such as statistics and accounting were transferred to the College of Business Administration, and the department has now become a theoretically oriented one.

The department now has 216 candidates for B.A. degrees composed of second, third and final year undergraduates, 33 working toward M.A. degrees and five for Ph.D. degrees. The annual departmental quota for incoming undergraduate majors is 75, while there are no limitation on the number of M.A. and Ph.D. degree candidates that the department may accept. The figure represents a reduction by half when compared to the period prior to 1961, when the departmental quota stood at 150, but shows an increase of 20 when compared with the period between 1961-1975 when the number was 55. During the six-year period from 1970-1976, the department conferred 350 B.A. degrees, 60 M.A. degrees, and produced three Ph.D.s. The demand for holders of the various levels of degrees conferred by the department has been consistently high, demand always outdistancing supply. The graduates of the undergraduate courses of the department go into government service, foreign and domestic banking firms, publicly-owned corporations, foreign trade, manufacturing, and other private enterprises. The tendency to work for higher degrees has been increasing. The majority of M.A. and Ph.D. degree holders go into teaching as well as banking. Many of high-ranking government officials, including ministers and vice-ministers, presidents of several major banks, and a significant portion of manager-presidents (in contradistinction to owner presidents) of major private enterprises are graduates of the department.

The department is at present staffed by twelve full-time faculty members. Nine of them are full professors, two assistant professors,

and one instructor. With the exceptions of one senior faculty member and two junior members, they hold Ph.D. degrees, mostly from Seoul National University.

The goal of undergraduate education in the department is two-fold: to enable students to acquire a systematic theoretical knowledge of the problems essential for a modern state, such as employment, price stability, economic development, income distribution and international balance of payments; and to enable students to acquire a critical ability to judge sensibly in policy formulations. The department offers a total of 34 courses on alternate basis to those majoring in economics, including micro-and macro-economic theories, econometrics, monetary policy, theory of economic fluctuations, economic histories, theory of economic development, economics of taxation, comparative economic system, and so on. A student must take a minimum of ten courses or 30 credit points from these courses offered in order to graduate.

The year prior to 1965 may be described as the period of consolidation as far as the scholarly activities of the department are concerned. With very few exceptions, publications by members of the department consisted of translations of the major works of international economic theories. In 1961, the Korean Institute of Economics was established with the members of the department forming the nucleus of the Institute. The quarterly journal of the institute, *Journal of Economics*, has been instrumental in stimulating original research in economic theories and their application to Korean economy. The following decade was devoted to the enhancement of precision in economic analyses by introducing the latest developments in theories concerning industry-related and econometric analyses, while at the same time readjusting and refining these theories so as to be relevant and useful in understanding the Korean economic realities.

Seven out of the twelve members of the department faculty have responded to our inquiry. Four are full professors, of whom three hold Ph.D.s. from Seoul National University, and three are assistant professors, only one of whom Ph.D., from the City University of New York. During the last five years, one respondent published 15 articles and six books. Another claims five articles and two books. Two have published five articles. Still another has published two articles. All seven respondents have received research grants from outside sources at least once during the last five years.

The respondents have identified the following as the areas of their respective interest and speciality:

Theories concerning labour economics and micro-economics as well as theoretical and practical analysis of labour problems in Korea;

Economic development planning and the industrial structure; Industrial policy;

Systematic study of the development of capitalism;

Nature of colonial systems and the origins of nationalism;

Studies of the changes and development of Korean economy in the twentieth century; and

Economic theories.

In response to the question concerning the respondent's contribution to national development, three see their scholarly works as having contributed to national development by: (1) contributing to the formulation of government labour policies through publications, seminars and services on advisory committees; (2) participating in the various phases in formulation of the government's economic development plan; and (3) helping to legislate the fair trade act. Two of the respondents see their works as having made no direct contribution to national development, while the rest made no response on this point.

Five of the Seven respondents of the Department of Economics serve on various intra- and extra-mural advisory committees. The organs which elicit their advice include the Economic Planning Board, Korea Development Institute, Bank of Korea and other banks, and Korea Broadcasting Corporation. The respondents feel that their advice has left imprints on government policies regarding (1) labour policies, (2) population policies, (3) research activities of banking organizations, (4) fair trade, and (5) quality of broadcasting. The frequency of their advisory activities ranges from once or twice a year to more than ten times during a year.

Three of the seven respondents write for newspapers and magazines, while the other four "almost never" write for these organs. The frequency of these popular writing ranges from once a month for two to two- or three-times a year for one. Six of the respondents attend seminars or give public lectures, the frequency of which ranges from once a month for four, two or three times a year for one,

and once a year for one. They "almost never" appear on radio or television. Five of the respondents engage in these more or less popular activities because they help the activities in their area of specialization while the rationale given by the sixth respondent was the need to enlighten the general public. None of the seven respondents has participated in any public campaign designed to promote any specific cause either related or unrelated to his area of specialization.

Department of Chemistry

The Department of Chemistry grew out of the department of chemistry at Keijo Imperial University. At the end of Japanese rule, however, there were only two Korean students in the department, both in their second year. There were less than a dozen chemists with university degrees scattered through Korea, Japan, and the United States of America, and only three of them held doctoral degrees. When the Department of Chemistry was constituted in the College of Liberal Arts at Seoul National University in 1946, the main thrust of education had necessarily to be the training of students. A turning point in the academic development of the department came in the early sixties, when number of professors as well as younger chemists returned from studies abroad. Toward the end of the fifties, the Korean Chemistry Association was formed and began publishing a journal; the Atomic Energy Institute was organized, and the first Korean fertilizer plant was constructed. Together with the Department of Chemical Engineering in the College of Engineering, the Department of Chemistry played a major role in these enterprises, providing needed manpower, resources and expertise. With the realization of the integration plan, the Department of Chemistry was reorganized as one of the 11 academic departments in the College of Natural Sciences.

The department now has 115 candidates for B.S. degrees, 19 for M.S. degrees, and seven for doctoral degrees. The annual departmental quota for incoming undergraduate departmental majors is 30, while the total number of M.S. candidate may not exceed 30. There is no limit as to the number of doctoral candidates the department may accept. During the six-year period from 1970 to 1976, the department has conferred 208 B.S. degrees, 30 M.S. degrees, and four doctoral degrees. During the last thirty years since the establishment of the department, it is estimated that more than 800 students

have graduated from the department. Of them, about 350 are engaged in teaching and research in the area of basic chemistry as university professors and research associates, about 200 in various fields of applied chemistry as researchers and industrial engineers, while the other 250 are variously engaged in administrative, entrepreneurial and commercial areas. Out of the 800, more than 350 have gone abroad for study, predominantly to the United States of America and West Germany. About half of them have returned home to assume posts as university professors and basic researchers in research institutes, while the other half remain abroad as students, researchers and professors.

The department is now staffed by twelve full-time faculty members. Four of them are full-profsessors, six associate professors, and the remaining two are assistant professors. With the single exception of an associate professor, they hold Ph.D.s., three from Seoul National University, six from various universities in the United States of America, one from Osaka University in Japan, and another from Kent University in Belgium.

The goal of undergraduate education at the department is two-fold: to enable students to think scientifically through study of chemistry, and to train future leaders in both pure and applied chemistry. The department offers a total of 39 courses on alternate bases to those majoring in chemistry, including organic chemistry, physical chemistry, quantitative chemistry, structural chemistry, solid state chemistry, inorganic chemistry and analytical chemistry. A chemistry major must take a minimum of 40 credit points from these courses offered.

Six out of the twelve members of the department responded to our inquiry. Two are full professors, three associate professors, the remaining one is an assistant professor. Three hold higher degrees from Purdue University, the University of Utah, and University of Washington respectively; two hold Ph.D.s. from Seoul National University, while the remaining one holds no Ph.D. degree. During the last five years, one respondent published 14 articles. The number of articles to the other respondents' credit during the last five years ranges from a minimum of two to a maximum of eight, while the number of books ranges from one to three. All six respondents have received research grants from outside sources such as the Ministry of Education, the Ministry of Science and Technology, of Korean Traders Scholarship Fund at

least once during the last five years.

Three of the respondents identified their main academic interest as lying in the area of basic chemistry, while surface chemistry, and organic synthesis were identified by other respondents. Four of the six respondents saw their scholarly products as having made no direct contribution to national development, while one respondent saw a positive contribution by improving quality control of chemical products and also through basic studies in antipollution measures in industrial plants, and another through the development of chemical compounds and processes which could be used for development of medicaments. All respondents, however, see the activity of the department as a whole as having made significant contributions to national development by providing the nucleus of highly-trained manpower in the field of chemistry. The graduates of the department staff the chemistry departments of the major universities in Korea, major research institutes, and major chemistry-based industries.

Four of the six respondents of the department serve on various extra-mural advisory committees, including those of the Korean Chemistry Association, the Ministry of Commerce and Industry, and the Ministry of Education. Five of the six respondents write "almost never" for newspapers and popular magazines, while one writes four times a month for such organs. They "almost never" appear on radio or television, and give no public lectures, although four of the respondents participate in seminars one or two times a month.

Two of the respondents felt that the relationship between the department and the government and industry is far from satisfactory. They felt that the government and industry have been favouring independent research institutes such as Korea Institute of Science and Technology and the Korea Institute of Science in awarding research and other contracts. Some of the projects and contracts awarded to these independent institutes, they felt, could be better carried out by the department with its outstanding pool of human resources, while at the same time serving educational purposes by involving students in them.

Department of Civil Engineering

The Department of Civil Engineering is one of the 17 academic departments which together make up the College of Engineering

of Seoul National University. The period preceding 1960 may be said to have been one in which academic activities of the department were geared principally towards producing able civil engineers. Research activities of the faculty members of the department were minimal and consisted primarily in the introduction of the basic engineering methods and literature from the more advanced countries. With the successful implementation of the first and second economic development plans in the 1960, the research activities of the faculty members became increasingly stimulated, reflecting the growing demand for civil engineering methods more appropriate for the realities of Korean economic development. Increasing research activities of the department are reflected by the number of articles produced within the department. During a ten-year period from 1961 to 1970, a total of 37 articles were published, while during a five-year period between 1971 to 1975, a total of 50 articles were produced by the members of the department, either individually or in collaboration.

The department now has 129 candidates for B.S. degrees, 9 in the M.S. programme and 10 in the doctoral programme. The annual departmental quota for incoming undergraduate departmental majors is 40 and there is no limit in number of M.S. or Ph.D. candidates the department may accept. During the six-year period from 1970 to 1976, the department produced 310 civil engineers with B.S. degrees, 20 M.S. holders, and four holders of doctoral degrees in civil engineering. The majority of B.S. holders go into such government agencies as the Ministry of Construction and the Ministry of Transportation, while those who hold higher degrees tend to go into teaching and research as university professors and researchers. During a ten-year period between 1967 and 1976, about 35 graduates of the department have gone abroad for further studies. Five of them returned to assume responsibilities as university professors and researchers, while the others are still abroad either continuing their studies or working as university teachers and researchers.

The department now has nine full-time faculty member. Five of them are full professors, two associate professors, and the remaining two assistant professors. Two full professors and one associate professor hold Ph.D. degrees in civil engineering from the University of Tokyo, two assistant professors hold higher civil engineering degrees from West German and American universities

respectively, while a full professors hold a doctoral degree in agriculture. Two full professors and one associate professor have no higher degrees.

The goal of undergraduate education in the Department of Civil Engineering is: (1) to train competent civil engineers capable of playing leading roles in the planning, designing and construction of such public facilities as roads, railways harbours, water supply and sewage systems, power plants and airports, and (2) to train those capable of accomplishing creative and continuous research works in the basic areas of civil engineering. The department offers a total of 32 courses on alternate bases to those undergraduates majoring in civil engineering. They include lecture, laboratory and seminar courses in structural analysis, surveying, soil mechanics, hydraulics, reinforced concrete, hydrology, harbour engineering, water supply, foundation, traffic, river, highway, and environmental engineering. A civil engineering major must take a minimum of 40 credit points from these courses in order to meet requirements for his specialization programme.

Eight of the nine faculty members of the department responded to our enquete. The sole exception was the professor who holds a degree in agriculture. Unlike other departments we have studied thus far, with the possible exception of the Department of Economics, civil engineering is a discipline whose achievements in terms of contribution to national development are clear and unambiguous. The department may be said to be directly involved in the phenomenal economic development of the last decade and a half in Korea not only through the high-level manpower it supplies, but also through the know-how and innovations of its faculty members as well as its graduates. All of the eight respondents registered very active publication activities. 11 articles, nine articles, eight articles and one book, two articles and two books, five articles and four books, five articles, four articles, and six articles were published by each of the eight respectively. Six of the respondents have received research grants and contracts from outside sources such as the Ministry of Education, Korean Traders Scholarship Foundation, the Ministry of Construction, the Ministry of Transportation, and various other public and private enterprises. Two have received more than eight such grants and contracts during the last five years, one five such grants, while two have received three such grants during the same period.

The respondents identified the following as the areas of their respective special interest:

Introduction and development of new civil engineering methods;

Computerization of structural engineering;

Innovative designing of structures through novel methods of reinforced concrete;

Design criteria for bridges of the box-girder type; and

Problems of an elementary but necessary nature at the present stage of economic and technological development in Korea.

Six of the respondents see their activities as having contributed directly to national development by: enabling the execution agencies to save construction costs; introducing and developing the newest methods in civil construction; and enabling practical engineers to use the results of research. Two of the respondents made no response on this point.

The faculty members of the Department of Civil Engineering are shown to be particularly active in advising the government and other public agencies. The frequency of their advisory activities ranges from more than 70 times during the past year to three times. The area of their involvement spans participation in city planning, construction of industrial bases, development of water resources, environmental and city engineering, highway construction and legislation of construction and engineering related laws and statutes.

The activism of the Department of Civil Engineering does not find a corresponding expression in the area of popular dissemination of knowledge. Six of the eight respondents "almost never" write for popular press organs, while one writes every two or three months and another one or two a year. The seven respondents never appear on radio or television, while the remaining one appears perhaps once a year. The respondents however do attend seminars: the frequency ranges from once a month for three to once or twice a year for one. None of the eight respondents has participated in any public campaign designed to promote a particular cause either related or unrelated to his area of speciality.

6 Conclusion

Three broad distinct but inter related clusters of problems emerge as the relevant problem areas in the foregoing consideration of the Korean case on the relationship between the university and national development: the phenomenal growth of higher education in quantitative terms, the problem of educational planning in higher education, and the tradition of academic purism.

The phenomenal economic growth during the last decade and half in Korea is inconceivable without the large pool of human resources trained in the rational mode of thinking and receptive to change created by the rapid quantitative growth of higher education during the fifties and the early sixties. Seoul National University also grew from a loosely federated university of a little more than 6,500 to a mammoth university of more than 15,000 students, faculty and administrative staff in a modern integrated campus. The quantitative proliferation of universities resulted, however, in deterioration in the quality of higher education. Not only were academic standards lowered. Liberal arts, law and commerce, which require relatively less in terms of educational investment, became predominant, strengthening the already extant tradition of the formalistic, book-centred and exegetic university education. Largely, unrelated to the immediate needs of national development, universities produced a large corps of expensively-educated but unemployed, indeed, unemployable, university graduates, thus adding rather than easing social tension.

The extreme laissez-fairism, which formed the background of the phenomenal growth in education in Korea, was not an outgrowth of any political ideology, but largely of a lack of clearly formulated developmental goals and the attendant lack of educational planning. With awakening of a self-conscious developmental attitude through the trial and error of the economic development efforts during the early sixties, however, a definite developmental attitude began to permeate the field of higher education. With the gradual spread of rational mode of thinking people began to see the

value of education in functional rather than symbolic terms. A will and, indeed, the need to relate the university education to the concrete and immediate needs of a society in the midst of unprecedented developmental throes became stronger and acuter. The proclamation of the National Education Charter, institution of pilot universities, reforms in the modality and structure of entrance examinations and curriculum, and the reorganization of Seoul National University for coherence and efficiency must be seen in the context of the need for a greater educational planning.

The tradition of academic purism, however, dies hard. The puristic orientation of the academic community tended often to come into conflict with the pragmatic developmental attitude of those actually entrusted with policy planning and implementation, thus deepening rather than ameliorating the internal value conflict during the transitional stage of the Korean society as a whole.

The puristic attitude is particularly pronounced in those university communities with an elitist self-perception, as is the case with Seoul National University. Our study indicates that even those departments with clear practical bias such as the Departments of Economics or Civil Engineering show strong disdain toward activities directly related to the immediate needs of the society. This attitude has been one of the sources of continuous tension between the university community and the outside communities, especially the government. As was seen in the cases of the Departments of Chemistry and Civil Engineering, many research contracts which could profitably be carried out by the university, go to independent research institutes with problem-solving bias. The government and business community make a legitimate demand on the university community to gear its research activities more closely towards meeting the immediate demands of a rapidly development society. The insistence of the university community on academic purism and basic researches often seem to them signs of disinterest and incompetence.

The sudden influx of research funds in 1977 under the Ministry of Education scheme to subsidize research projects with immediate policy implications is bound to have a serious impact on the character of research carried out in the university. A total of 205 million Won was granted to various institutional and individual members of Seoul National University for a total of 54 policy-oriented projects, while only 50 million Won was allocated for 52

projects in basic researches, a considerable reduction from 1976's 90 million Won Drawing a clear cut line between pure and policy researches is certainly a difficult matter, but the emphasis on the social and national need upon which this scheme is predicated in the long run cannot but alter the character of research done at Seoul National University

While recognizing the legitimate demands of the government and the society at large for more immediate relevance and welcoming inflow of money for research, it must be stated that it is essential that the university be allowed to establish autonomously the priorities in its research activities and allocate available resources accordingly This is particularly so because there has been much critical rethinking within the university community in recent years on the social function of the university in a rapidly industrializing society such as Korea Exploration of the frontiers of knowledge, irrespective of practical consequences, may be the greatest contribution the university can make to national development To this end, the university must be able to define autonomously the character of research activities within its confines and the relationship to the needs of the society and the nation at large

ANNEXURE I

The Charter of National Education

We have been born into this land, charged with the historic mission of regenerating the nation. This is the time for us to establish a self-reliant posture within and contribute to the common prosperity of mankind without, by revitalizing the illustrious spirit of our forefathers. We do hereby state the proper course to follow and set it up as the aim of our education.

With the sincere mind and strong body improving ourselves in learning and arts, developing the innate faculty of each of us, and overcoming the existing difficulties for the rapid progress of the nation, we will cultivate our creative power and pioneer spirit. We will give the foremost consideration to public good and order, set a value of efficiency and quality, and, inheriting the tradition of mutual assistance rooted in love, respect and faithfulness, will promote the spirit of fair and warm co-operation. Realizing that the nation develops through the creative and co-operative activities and that the national prosperity is the ground for individual growth, we will do our best to fulfill the responsibility and obligation attendant upon our freedom and right, and encourage the willingness of the people to participate and serve in building the nation.

The love of the country and follow countrymen together with the firm belief in democracy against communism in the way for our survival and the basis for realizing the ideals of the free world. Looking forward to the future when we shall have the honourable fatherland unified for the everlasting good of posterity, we, as an industrious people with the confidence and pride, pledge ourselves to make a new history with the untiring effort and collective wisdom of the whole nation.

Pakistan: The University of Karachi

S. M. HAFEEZ ZAIDI

1 Higher Education in Pakistan

1 Introduction

Higher education today has been recognized as a capital investment all over the world. Gone are the days when university education was the privilege of the elite, merely for satisfying their curiosity or getting them a position of power and prestige in society. The ivory towers which once existed at the universities around the world have fallen to the ground with the realization of what higher education in general and science and technology in particular can achieve for the development of a country. Higher education today has become the most potent instrument for social and cultural change as well as for economic transformation of society. In order, therefore, for the universities in Pakistan to play their role as agents of modernization and social change, a major focus of their researches must reflect the importance of their relationship to the community and responsiveness to its needs and the forces operating in it. If universities are to be effective in providing intellectual leadership and in helping to solve national problems, they should act as intellectual and practical laboratories in which these can be worked out with intelligence, skill and social purpose.

Unfortunately, in many developing countries, universities still cater primarily to the needs of the elite class, although lip-service is paid to the new role of the university as a potent agent of change. It is generally expected that the universities will serve the needs of the society and will reflect its aspirations and goals, but neither the university authorities nor the public have done much beyond verbally reiterating the new role expectation of the university. Professor A. Salam, a distinguished Pakistani physicist writing in 1966 about the isolation of the scientist in developing countries, laments over the lack of tradition for research relevant to the national goals in our university system. He writes in *Minerva*:

It remains a sad fact that though India and Pakistan may have built specialized institutes outside the university system where

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It remains a sad fact that though India and Pakistan may have built specialized institutes outside the university system where

advanced research is carried out, by and large their vast university system remain weak, static and uninspired. It is not part of their tradition to make a place for advanced research or even for research at all.

The present paper is not concerned so much with evaluating attitudes as with a candid description of the actual role performed by universities in national development. In order to do so we must also assume that two conditions have been met, viz. that there is acceptance of the idea that universities should play a role in national development and that they have the capacity to make a useful contribution. The first condition has been met in most developing countries and the analysis of the second condition is the theme of this paper.

In order to describe the role being played by Pakistani universities in general and by the University of Karachi in particular, it seems necessary to clearly identify the dimensions of national development as defined by authoritative agencies and individuals who determine national policies concerning development and economic change. Given below, therefore, are official statements on national development issued at different times during the last decade.

Development defined

Development as distinguished from growth is a process of institutional change. Development planning by definition, therefore, must include plans for major institutional changes—social, political, cultural and psychological.

The history of development planning in Pakistan is brief. We completed our third five-year plan in 1970 but the fourth five-year plan could not be launched immediately due to the East Pakistan debacle. The third plan also had to undergo drastic revisions due to Indo-Pakistan war of 1965.

Planning in Pakistan has from the beginning been primarily investment planning specifying investment targets, suggesting means for mobilizing resources and identifying possible sources of financing.

ble to define long-range economic goals, formulate a clear-cut economic philosophy and to draw blue-prints for orderly change. For this purpose a twenty-year Perspective Plan to be achieved in five-year stages (1965-85) was evolved by planners.

The philosophy underlying economic growth in Pakistan was outlined by President Ayub as follows in his forward to the third five-year plan:

The ultimate aim of all our efforts in the economic and social spheres can only be to move speedily towards the attainment of Islamic Socialism in Pakistan. The term "Islamic Socialism" is almost interchangeable with welfare state. In addition to the familiar welfare goals, Islamic Socialism implies that the cultural and religious heritage of the country should be preserved and not allowed to be destroyed by the ruthless pursuit of economic development.

In his preface the Deputy Chairman of the Planning Commission elaborated on this statement. He wrote: "Economic development always entails profound social changes, the speed of which varies according to the attitude of the community and its political leadership towards change."

Out of ten concrete objectives set forth in the Plan the last three emphasize the development goals of the society. These were:

- (a) To provide better housing, more health services and greater facilities for education.
- (b) To ensure better distribution of wealth, opportunities and other benefits.
- (c) To press forward towards certain specific social objectives, i.e. reducing inequalities in the distribution of income, wealth, economic power, cultural changes conducive to accelerate economic expansion.

It is quite obvious that in Pakistan national development has never meant only increased economic production which would necessarily follow as a result of development. The ultimate objective of development planning has been to improve the quality of living which would only be possible if planning increases the capacity to produce and not just production. The approach to national deve-

lopment inevitably has to recognize the human and social factors in development.

Pakistani planners also seem to have recognized the fact that in efforts for material progress there should be a counter-balance on the cultural side of national life, otherwise the material enjoyment resulting from increased economic output may become less satisfying. The early years of national planning in Pakistan may, not have been specific about improving the quality of living but in recent plans the emphasis on the building up of the socio-cultural infrastructure has increased. The following statement on social and economic objectives of Pakistan Government was given in May 1976 by no less a person than the Economic Adviser to the Prime Minister of Pakistan.

To improve production, to enhance self-reliance, to broaden economic and social opportunities and specially to improve the standard of living of the lower income groups and their participation and stake in national economy and the society in general (*Dawn*, May 1976).

More pertinent to our present theme is another statement by the Economic Adviser who was briefing the press on the decisions taken in the meeting of the National Economic Council. He said:

In a couple of years there will be enough schools for all girls. In the middle and higher education our emphasis is on technical and practical subjects so that those who come out of educational institutions would be equipped to earn a living, to make a contribution to the national economy and not just be certificate and degree holders without anything to offer.

Although economic development has been the main target of development planning in the early phases, the focus has changed to more comprehensive and broad-based development programmes encompassing education, manpower planning and national, political and linguistic integration.

In the process of economic development during the first three five-year plans, a certain imbalance was observed between the type of manpower required and the actual manpower produced through various educational and training institutions. In 1968, a National

Commission on Manpower and Education was appointed to prepare a comprehensive education, research and training programme for producing the right type of personnel suited to the growing requirements of the economy.

The first two plans primarily aim at bringing about a reorganization of the education systems on a pattern suited to the essential needs of the country. One achievement of the second plan was the creation of the system of technical education. Significant advances were made in terms of providing physical facilities inclusive of buildings, scientific equipment, laboratories, libraries, study rooms for teachers and other facilities. The third plan envisaged a relatively larger and broad-based educational development programme.

Facilities for increased agricultural training and research are being rapidly expanded to meet the increasing demands for agricultural scientists, engineers, technicians, skilled workmen and trained farmers. The number of agricultural graduates has to be increased for which Agriculture College at Tandojam (Sind) is proposed to be raised to a university status.

The question of the medium of instruction at the degree level which has agitated the minds of the public in Pakistan since Independence provides in microcosm a picture of how various external political and social factors influence matters which are of utmost importance in higher education. For more than a century in India and, therefore, after establishment of Pakistan, English continued to be the medium of instruction in colleges and universities.

A number of languages, all belonging to the Aryan group, are spoken in different sub-regions of Pakistan. Pashto, Punjabi, Sindhi and Baluchi are the main regional languages besides several local dialects. Urdu serves as the *lingua franca* and is also the national language of Pakistan. Punjab, Baluchistan and NWFP have adopted Urdu as their official provincial languages while in Sind both Urdu and Sindhi are the official languages of the Province. At the university level, the medium of instruction remains both English and Urdu, particularly at the Universities of Karachi and the Punjab and students can answer their examinations in either language. Translations of textbooks and other reference materials have been going on both in Urdu and in other regional languages. It is proposed that gradually Urdu will be able to replace English in all academic disciplines. However, no definite target date can be assigned for the complete switch-over.

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The question of the medium of instruction at the degree level which has agitated the minds of the public in Pakistan since Independence provides in microcosm a picture of how various external political and social factors influence matters which are of utmost importance in higher education. For more than a century in India and, therefore, after establishment of Pakistan, English continued to be the medium of instruction in colleges and universities.

A number of languages, all belonging to the Aryan group, are spoken in different sub-regions of Pakistan. Pashto, Punjabi, Sindhi and Baluchi are the main regional languages besides several local dialects. Urdu serves as the *lingua franca* and is also the national language of Pakistan. Punjab, Baluchistan and NWFP have adopted Urdu as their official provincial languages while in Sind both Urdu and Sindhi are the official languages of the province. At the university level, the medium of instruction remains both English and Urdu, particularly at the Universities of Karachi and the Punjab and students can answer their examinations in either language. Translations of textbooks and other reference materials have been going on both in Urdu and in other regional languages. It is proposed that gradually Urdu will be able to replace English in all academic disciplines. However, no definite target date can be assigned for the complete switch-over.

The ultimate aim of development planning in Pakistan is to develop the economic and socio-cultural institutions in the country so as to achieve increased control over the environment, increased control over its own political destiny as well as to enable her citizens to gain increased control over themselves. The focus of development efforts is directed towards the growth of a wholesome personality which is morally strong and intellectually sound. It is in this respect that the university can become a significant generative force that will bring out the best in the national culture and integrate and absorb new cultural trends into the existing social structure.

Pakistan-ecology and culture

Ecologically, the people of Pakistan live in diversified environments. There are vast areas such as parts of the Thar Desert and dry hill-tracts of trans-Indus territories which together with further inequalities in the distribution of natural resources and economic opportunities produce wide disparities in population densities and transportation facilities.

Widely contrasting regional environments range from the sparsely inhabited, underdeveloped, dry, hilly tracts of Baluchistan and the inaccessible north western mountainous parts of the country to the densely-populated, considerably developed Rachana and Bari Doabs of the Punjab plains possessing relatively more efficient transportation facilities. The unattractive mule-tracked parts of the Thar Desert in the east stand in sharp contrast to the closely settled lower Indus Valley crisscrossed by a close network of railways and roads. Also the entire Baluchistan region including the district of Dera Ghazikhan on the Western side of the Indus falls in the poor category of transportation facilities. Railways are generally lacking. Only one railway line runs from Rohri to Zahidan (in Iran) via Quetta. Another two are branch lines running to Khost and Chaman from Sihi and Quetta respectively.

Pakistan can be divided into seven major physiographic regions: Northern mountains, Western mountains, Salt Range and Potwar Plateau, Upper Indus plain, Lower Indus plain, Baluchistan Plateau and Thar desert. The location of Northern mountains is very important for Pakistan is that they intercept the winds from the Arabian Sea and thus cause the rainfall. At the same time they form

a great barrier to the cold winds from Central Asia for the plains of Pakistan.

Pakistan contains some of the hottest parts of the world in Jacobabad and the Sibi Desert and extreme cold in parts of Baluchistan and Northern mountain areas. The physical conditions vary so greatly as to make average temperature virtually meaningless.

Pakistan also suffers from a general deficiency in rainfall. Baluchistan is the driest part with an average of 8". On the Southern ranges of the Himalayas 50" of precipitation takes place, while to the lee of these mountains, the rainfall is hardly 6" in Gilgit and Baltistan.

In Pakistan, soils vary considerably. Most of them, however, fall under the dry group called pedocals possessing a high content of calcium carbonate and low contents of organic matter. Extensive use of irrigation waters has put these soils to extensive use and they are very fertile. Soils in the plains are alluvial both old and new.

Pakistan occupies an area of 310,403 sq. miles extending from 23° to 30° to $36^{\circ} 45'$ N. altitude and from 61° to $75^{\circ} 30'$ E. longitude. She has about 40,000 villages with large agglomeration.

The Indo-Pak subcontinent has attracted migrants from both the north-east and the north-west. The original Dravidians were followed by the Aryans, the Greeks, the Persians, the Arabs, the Turks and the Noghais, and as a result a mixture of races has resulted. The final blend is a predominantly Caucasian general type with the Mediterranean strain outstanding. In terms of origin, the dominant social type in Pakistan is Indo-Aryan.

The diversified character of climate, surface configuration, mineral wealth, soil and irrigation facilities are clearly reflected in the patterns of human settlement and movement. In many parts of Baluchistan and mountainous north, nomadism has developed as a way of life whereas in other parts of the country agriculture is the mainstay. The brave and freedom loving Pathans, farmer-soldier Punjabis, the traditionally rich Sindhis and tribal Baluchis inhabit the various parts of Pakistan. Added to this variety are the groups of migrants from various parts of India who are spread over all the four provinces, although the main concentration is in Karachi.

The rich variety of languages, customs and folkways is woven into single and culturally homogenous pattern by the strong bonds of Islam which not only holds them together as a religion but also makes for a unity of outlook and way of life, a unity which trans-

cends cultural and linguistic diversity.

Pakistan with a population of 65 million is a country with several sub-cultural groups. She is divided into four provinces each of which has its own local language. The linguistic affiliations of the people make them quite distinct from each other. However, there is greater emphasis on unity whose fundamental basis is emotional commitment to Islam.

Pakistan's emergence was a result of the ideological commitment of Muslims to Islam. The basic motivation for the struggle was to have a place where they could practise their own way of life and would be in a position to preserve their culture. The intensity of the ideological commitment has decreased and new socio-economic challenges have slightly displaced it in importance. No one, however, in any part of Pakistan would deny that the ideological basis is still a dominant cultural theme. The present regime which came to power through a predominantly economic manifesto has also set as its ultimate goal the achievement of equality for all on the pattern enjoined by the Prophet of Islam (*Masawat-i-Mohammadi*).

The dominant cultural theme in Pakistan is Islamic ideology. However, there are some other features of the social structure which play significant roles in determining our social behaviour. For example traditionalism and ascribed social status are still strong constraints against socio-economic changes. There is respect for age and higher status. There is an ambivalence towards authority, but the overt behaviour is one of respect and reverence. There is a strong dependency need shown towards the superior and a passive acceptance almost amounting to fatalistic belief regarding the outcome of one's efforts and actions. Although there is no rigid social stratification, Pakistani social structure tends to be more closed than open.

There is, however, a perceptible change in the value-orientation and dominant culture themes, particularly in the urban section of the population. The basis of social classification which was predominantly ascriptive seems to have changed due to greater measure of social mobility in the cities and the barriers of traditional class differentiation are falling.

Within the context of existing Pakistan social structure, university education, which is based on British traditions, has been the privilege of only the few. University education still bestows social status and prestige and almost guarantees better material prospects.

Until a few decades ago the elite conception of university education was generally accepted. However, in recent years there has been a marked shift towards availability of university education for all social classes, although a university Degree is still a prime achievement.

Higher education in Pakistan

The conditions obtaining in our institutions of higher learning today are a far cry from the glorious contributions made by the Islamic civilization in the fields of science, medicine, history and philosophy eleven to eight centuries ago. The memory of this once healthy and dynamic state of learning and the respect for the learned lingers on and provides a focus for our aspirations.

The picture of higher education which emerged in the wake of partition of Indo-Pak sub-continent in 1947 was not very encouraging. The University of the Punjab, established in 1882, and the University of Dacca—(1921) were the only two established institutions of higher learning in the country. The University of Sind received its charter in 1947 just before Independence and was still in an organizational phase. Out of all the main institutions of scientific research like the various National Research Laboratories established in India just before the partition, none came to Pakistan's share. Thus, the base of higher education was not wide enough to build a more broad and varied edifice of university teaching and research in the country. The colleges, which were not too numerous either, had also suffered badly due to the exodus of Hindu teachers to India although those Muslims who came in from India filled—the vacuum and carried on the work under difficult conditions. The whole structure of education, from the lowest to the highest, had, therefore, become unstable and lost its equilibrium. Assigning higher priority to problems of defence, refugee rehabilitation and the running of new governmental machinery, the government of the day could not pay proper attention to education, as such, in the country.

However, since 1947 to-date, besides the three universities that existed at the time of Independence, the new universities of Peshawar (1950), Karachi (1951), West Pakistan Agriculture University at Layallpur (1965), the University of Engineering and Technology at Lahore (1961), Quaid-e-Azam University at Islamabad (1965), Baluchistan University at Quetta, (1970), People's Open University

in Islamabad (1973), Gomal University (1974) and Multan University (1975) have been established. Islamic University at Bahawalpur (1975) has also been given a university charter.

During the fifth five-year plan period some more universities are to be established in order to meet the requirements of higher education for comparatively backward areas. Three colleges in Sind, two for engineering at Karachi and Nawab Shah and one for agriculture at Tandojam have been given the status of university campuses under province-chancellors.

At present there are eight general universities, two professional universities—one for agriculture and the other for engineering and technology—one specialized open university, and four additional universities campuses, one within the jurisdiction of Karachi University and three, within Sind University. These campuses will soon become separate universities. Thus it is expected that within a year or two, Pakistan will have 16 or 17 universities of different categories. Tables 1-7 prepared from UGC records give relevant facts and figures about Universities in Pakistan.

Universities in Pakistan are fully financed by the Government. There are no private universities. All the universities get their charter from the provincial legislatures (except Quaid-e-Azam University at Islamabad which is Federal and was given its charter by the National Assembly). An almost identical pattern of internal relationships and authority exists at all the universities. Education at all levels is subject to a provincial control in Pakistan. However, universities are also part of the national education system. The University Grants Commission, a central authority, provides the link between the different universities through a statutory Vice-Chancellor's Standing Committee which meets frequently to discuss problems of mutual concern. The University Grants Commission is also the institutionalized link between the central government and the universities. The UGC also provides funds to organize universities summer seminars for college and university teachers in selected subjects. These seminars aim at improving and bringing up-to-date the knowledge of the participants in their respective fields of study and methods of teaching. Major policy decisions regarding education are also taken at the central Ministry of Education during meetings in which vice-chancellors often participate along with senior officers of the Ministry. The central Ministry of Education also administers the allocation of overseas scholarships and

TABLE 1. *Universities and their Institutes*

Name of University	Location	Year of Establishment	Type	No. of Teaching Depts	No. of Institutes	No. of Constitutes Colleges	No. of Affiliated Colleges
Punjab	Lahore	1882	Teaching and affiliating	27	4	3	104
Sind	Jamshoro	1947	—do—	30	3	1	68
Peshawar	Peshawar	1950	—do—	23	2	7	22
Karachi	Karachi	1951	—do—	38	2	—	49
Eng' & Tech.	Lahore	1961	—do—	13	1	—	1
Agriculture	Lyalpur	1961	Teaching and affiliating	43	—	1	1
Quaid-e-Azam*	Islamabad	1965	Teaching	14	—	—	—
Baluchistan	Quetta	1970	Teaching and affiliating	14	—	1	—
People's Open	Islamabad	1973	—	5	4	—	—
Gomal	D.I.Khan	1974	Teaching and affiliating	10	—	—	8
Multan	Multan	1975	—do—	8	—	—	10
Bahawalpur	Bahawalpur	1975	—do—	13	—	—	8

*Previously called University of Islamabad.

TABLE 2. University Enrolments by Level of Courses and Sex for the Years, 1970-71 1971-72 and 1973-74

Univ./Level	1970-71			1971-72			1973-74		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
All Universities	13,764	3,964	17,690	15,842	4,192	20,034	23,116	4,637	23,753
Bachelors' Degree	6,417	1,154	7,571	8,673	1,408	10,086	14,570	1,961	16,531
Masters' Degree	5,455	2,496	7,951	5,565	2,381	7,946	5,731	2,402	8,133
Doctorate	173	23	196	186	30	216	307	85	392
Other Courses	1,719	253	1,972	1,413	373	1,786	2,508	189	2,697
General Universities	8,816	3,709	12,525	10,963	3,864	14,827	17,134	4,604	21,738
Bachelors' Degree	2,866	1,142	4,008	4,951	1,394	6,345	10,149	1,947	12,096
Master's Degree	4,863	2,471	7,340	4,910	2,376	7,286	5,038	2,394	7,432
Doctorate	75	16	91	74	25	99	212	74	286
Other Courses	1,006	80	1,086	1,028	69	1,097	1,735	189	1,924
Karachi University	3,168	2,001	5,169	5,308	2,137	7,445	4,406	2,565	6,971
Bachelors' Degree	1,230	823	2,053	3,585	1,041	4,426	2,387	1,208	3,595
Masters' Degree	1,357	1,126	2,483	1,332	1,060	2,392	1,273	1,196	2,469
Doctorate	33	9	42	36	20	56	55	35	90
Other Courses	548	43	591	555	16	571	691	126	817

Doctorate includes M. Phil. also.

Other courses include Certificates and Diploma courses.

TABLE 3. Output at Various Examinations Conducted by Universities in Terms of Courses and Sex for the Years 1970-71, 1971-72, 1973-74

University level of Courses	1970-71			1971-72			1973-74		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
All Universities	3,3595	10,602	44,197	33,173	11,660	48,833	39,607	13,687	53,294
Bachelor's	2,6491	8,694	35,185	29,578	9,534	39,112	31,322	11,271	42,593
Master's	5,544	1,793	7,337	6,090	1,973	8,063	7,465	2,285	9,550
Doctorate	25	4	29	46	5	51	32	14	46
Other Courses	1,535	111	1,646	1,450	148	1,607	988	117	1,105
General Universities	31,793	10,602	42,395	32,494	11,658	47,152	37,974	13,683	51,657
Bachelor's	25,775	8,694	34,469	28,837	9,532	38,369	30,520	11,227	41,797
Master's	5,435	1,793	7,228	5,195	1,973	7,888	7,063	2,282	9,345
Doctorate	25	4	29	46	5	51	31	14	45
Other Courses	558	111	669	696	148	844	353	117	470
Karachi Universities	9,264	3,861	12,125	8,363	4,070	12,433	6,054	3,617	9,671
Bachelor's	6,827	3,122	9,949	6,969	3,309	10,278	5,044	3,091	8,139
Master's	1,084	668	1,752	1,078	660	1,738	754	573	1,327
Doctorate	3	—	3	1	0	1	—	—	—
Other Courses	350	71	421	315	101	416	117	92	209
All Technical Universities	1,802	—	1,802	1,679	2	1,681	1,633	4	1,637
Bachelor's	716	—	716	741	2	743	795	1	796
Master's	109	0	109	175	—	175	202	3	205
Doctorate	—	—	—	—	—	—	1	—	1
Other Courses	—	—	—	—	—	—	—	—	—

Doctorate includes M.Phil. also. Other courses include Certificate and Diploma Output (Examination results) is only of final classes.

TABLE 4. Teacher-Student Ratio (1974-75)

S.No.	University	No. of Teachers	No. of Students	Teacher-Student Ratio
1.	Punjab	332	5918	1:18
2.	Sind	364	2926	1:8
3.	Karachi	345	6971	1:20
4.	Agriculture	359	3638	1:10
5.	Eng. and Technology	197	2740	1:14
6.	Peshawar	489	4356	1:9
7.	Islamabad	91	626	1:7
8.	Baluchistan	59	785	1:13

TABLE 5. University Teachers and their Qualifications

University	Foreign Ph.D.	Local Ph.D.	Foreign M.A./M.Sc.	Local M.A./M.Sc.
Baluchistan	10	Nil	2	46
Agriculture	105	13	154	84
Eng. and Technology	50	Nil	35	112 (B. Sc. Eng.)
Peshawar	56	2	110	285
Sind	55	7	28	271
Karachi	131	21	70	157
Punjab	102	14	48	139
Islamabad	60	Nil	4	27

TABLE 6. Library Data of Various Universities (1974-75)

University	No. of Books	No. of Journals Subscribed	Annual Library Grant
Agriculture	70,000	655	2,24,120
Baluchistan	17,000	68	3,70,000
Eng. and Technology	48,500	220	1,58,640
Islamabad	37,313	474	5,30,000
Karachi	1,46,900	196	2,12,000
Punjab	2,72,000	357	2,94,000
Peshawar	5,000	250	1,10,000
Sind	1,08,810	150	2,10,000

fellowships to all the Universities. Ad hoc and partial financial grants for various university development projects including research also come from the central government. Thus while the universities legally and administratively are placed under the cont-

TABLE. 7 *Budget Expenditure of all Universities In Pakistan—
at a Glance, 1974-75
(Total Budget Rs 20, 73, 96, 569)*

<i>Expenditure</i>	<i>Recurring</i>	<i>Non-Recurring</i>	<i>Total Expenditure</i>
Administrative	5,22,00,910	6,10,65,754	11,32,66,664
Academic	4,89,12,611	3,00,71,691	7,89,84,302
Misc/Other	94,49,517	56,96,086	1,51,45,603
Total Budget	11,05,63,033	9,68,33,531	20,73,96,569

rol of the provincial governments, there are several avenues through which the central government takes hand in university affairs.

Higher education in Pakistan has always been fully financed by the government and as a consequence, the government has always had some say in university affairs. However, in spite of the government influence, there is considerable freedom of action and choice within each university.

To provide a historical perspective, we can divide the government university relationship in Pakistan into three phases. From 1947 to 1961, all the universities were run under separate acts legislated by provincial governments. Under these acts, representation of teachers on the various statutory bodies was provided. These statutory bodies enjoyed a considerable amount of academic freedom.

The University Acts were repealed in 1961 and were replaced by University Ordinance which abolished all elective bodies and the vice-chancellor acted as a representative of the government. He became the source of all authority, although he himself derived his power from the chancellor through the secretary to the chancellor who usually was a civil servant working as provincial education secretary.

The third and the present phase began in 1972 when the University Ordinance was repealed and each university got back its act, only this time with more representation of teachers and students on the various statutory bodies of the university.

A most laudable step of the present government is the establishment of five Centres of Excellence in various universities: Solid State Physics at the Punjab University, Analytical Chemistry at Sind, Geology at Peshawar, Mineralogy at Baluchistan and Marine Biology at Karachi University. Similarly, Area Study Centres have also been opened in different universities covering Europe, Central

Asia, South East Asia, Middle East and Africa. The Pakistan Studies Centre is located at Islamabad.

Needless to emphasize that the number of entrants to various universities has been constantly rising and there is great pressure for admissions to higher institutions of learning. Admissions to medical and engineering colleges have become almost political issues at the beginning of each academic year. There is also very great demand for admission to pharmacy. During the operation of the third five-year plan, it has been noted that a significant development in education was that the number of science students doubled in 1969-70 as compared to the position in 1965. The number of arts students also increased during this period. The number of students in all subjects has since been increasing.

The significant role of the universities in national development has not been fully appreciated in the past in Pakistan and education suffered because of a low priority given to it in national policy-making. It is only recently with the advent of the New Education Policy (1972-80) that fresh goals have been set and clear objectives defined which take into account the new concept of modern education.

Certain steps taken recently in the field of higher education are greatly satisfying and in some cases admirable, like the setting up of the University Grants Commission and Pakistan Science Foundation, the Councils of Professional Education, the five Centres of Excellence, the Six Area Study Centres and Pakistan Study Centres at various Universities, the establishment of the People's Open University and the National Book Foundation and the revision of pay scales of the university and college teachers.

However, the general picture in our universities is far from satisfactory. It is beset with problems of low academic standards, lack of academic atmosphere and, unfortunately, lack of responsibility on the part of the teachers as well. Among other reasons, to a great extent, this is due to the fact that the universities have remained for the most part grossly neglected and inadequately supported. This neglect has inevitably resulted in their inability to make any noticeable impact in national life and failure to build up and maintain quality in their teaching and research. Another factor which has adversely affected our education in general and higher education in particular is the role of students, otherwise a very glorious one. During the Independence movement, the students contributed

greatly to the fight for Pakistan. But, even when the battle was over and victory was ours, the students, instead of reverting to academic activities, continued to participate in active politics. Unfortunately, these undesirable traditions are still being maintained and are being inherited by the generations that follow.

The process of education had fairly settled down and had found a good deal of equilibrium during the sixties when in October 1968 the students launched a campaign demanding educational reforms and the repeal of the 1961 University Ordinance. This movement slowly built up and merged into a popular struggle for the restoration of democracy in the country. In order to appease the student community the then President went on the air personally on 1 December 1968 to announce acceptance of almost all their demands. This step was tantamount to a complete surrender to students and led to further demands later, resulting in a complete collapse of student discipline, and sparking off a chain-reaction which has persisted ever since. The period between 1968 and 1971 was the most disturbed one in the history of our country. Like other sectors of national life, education too went through the same pangs and sufferings, and could not make any headway. The 1971 war and the loss of East Pakistan was too big a blow, both materially as well as psychologically. But the nation picked up the pieces and has started to build a new Pakistan. There is no doubt that considerable achievements have been made since 1972 but a lot remains to be done if we wish to promote quality teaching and research in our universities and to optimize the utilization of this highly trained manpower for improving the quality of life of our people.

Current problems and trends

Higher education in Pakistan is presently facing many problems and difficulties although attempts are being made to improve the situation in educational institutions. The following points indicate briefly the current trends and may be taken as indicators of the country's academic dilemma.

The aimlessness of higher education, overcrowding in classrooms and the open-door policy for admission are some of the main causes of the low standards of higher education. Students enter universities without any purpose or planning and choose subjects either on the basis of personal whims or because their friends are taking the same subject or some elder in the family has advised

them so. These factors have steadily brought down standards reducing them in certain ways to a sad state of affairs.

University students are profoundly dissatisfied with the traditional form and structure of the higher institutions. What they seek is a change of the academic structure because they feel alienated from its outmoded goals. The frustration and sense of alienation are becoming so intense that violence seems their only recourse if they are to be noticed by those in positions of power.

The university's inability to meet the rising aspirations for higher education, depersonalization of the teaching process, decreasing degree of attention given to students and, above all, its slowness to change and adapt its procedures and programmes to the changing political, social economic and cultural demands are eroding the very vitals of the academic life.

Manpower requirements of the country have never been assessed for the various nation-building sectors both at the federal and provincial levels. Universities, therefore, have no data in which to base their admission policies.

A serious brain drain is also facing our higher education. There are many reasons, but the more important ones are attractive job opportunities outside and the lack of facilities for research and advancement within the country. We have not planned things in the past and are not generating enough manpower to maintain and develop institutions of higher education.

General apathy and indifference to the promotion of research on the part of those directing affairs in the universities in the past and their emphasis merely on teaching could very well be responsible for absence of research facilities. Consequently, many capable scholars who had done excellent research abroad felt helpless and frustrated and finally, fell into the pattern of classroom teaching. Research in universities has suffered not for lack of talent but through indifference.

There is very little research being carried out in medical or engineering fields although we have a medical research council and two universities of engineering. The medical and engineering faculties are only engaged in teaching prospective physicians and engineers. The medical and engineering graduates after leaving college or the university have no link with the academic community and receive little help from professional associations through seminars, meetings, publications and other professional activities. They thus

lose touch with the professional developments in their fields.

There is no working relationship between the universities and various research organizations in the country. There is practically no link between the industries and the universities either. Industries in Pakistan never established their own research units nor did they play any role in promoting research to the universities.

The necessary weight—has not yet been given to teaching and research in social sciences in our universities. Because of the great significance attached to science and technology, there has been a virtual neglect and indifference towards the social sciences. Students select subjects in terms of the expected returns. As a result, the role of classics is receding and modern languages are gaining ground. The concept of education for enlightenment is disappearing. The demand for philosophy and history as subjects for study at the university level is also decreasing.

2 The University of Karachi

Its physical setting and demographic features

The university campus is located about 12 miles away to the northeast of the city of Karachi and occupies an area of about 1,280 acres. It is sited on terraces between the Layari River in the west and the low Drigh Hills in the east covered by a thin veneer of alluvium. The mean daily maximum temperature ranges from 77°F in January to 95°F in the months of May and October and the minimum, ranges from 50°F in January to 80°F in June. The campus was shifted in 1960 to its present site. Since then the academic and residential areas have developed into a modern campus with roadside trees, lawns and gardens. The original building plan was designed to reflect Islamic structural characteristics combined with the needs of a new modern university so as to represent the aspirations of a new nation which is Muslim in character and modern in outlook.

The patch of about six miles between one end of the city and the campus is being gradually filled up with multi-storey flats and residential bungalows. A housing scheme entitled Gulshan-e-Iqbal is bringing the campus closer to the city of Karachi. There is no longer the sense of loneliness while driving from the city to the campus. However, the distance and the relative isolation of the campus from the main city are still handicaps for both the campus residents and for the students who commute from various parts of the city.

The city of Karachi with a population of more than 4 million inhabitants represents a collection of the large number of widely-spread localities from Kemari, the port areas in the south and to the industrial area of Landhi in the north covering a distance of about 20 miles. The eastern and western extremities are represented by Korangi and New Karachi extending up to the Manghopir hills. Karachi city has a tropical climate. In certain months it is extremely hot and humid but the sea breeze from the west makes it pleasantly cool and patches of cloud filter the sun's rays. These two factors

moderate the Karachi climate. Although the city planners have endeavoured to develop a good network of roads, the shortage of buses within the city and the lack of direct links between various parts of the city and the university campus minimize the efficiency and effectiveness of the network of roads and streets.

The students at the campus come from all parts of the city and its suburbs, in addition to about 700 male and female students who reside in halls of residence at the campus. The university has four boys' hostels, one girls' hostel and an international hostel for foreign students. Many foreign students also rent flats or live as paying guests in the city.

The residents as well as the commuting population at the campus do not come from Karachi alone. They come from other parts of Pakistan including such far-flung areas as Gilgit and Kharan. Being the only gateway, Karachi serves as the hub of trade and commercial activities for the whole country. The largest concentration of industries and services resulting in job-opportunities also makes Karachi attractive to people from all over the country.

The campus has residential houses for about 30 per cent of the university employees both teachers and non-teachers who make up a permanent population of about 4,000 persons on the campus, which contains two mosques, a primary school, two banks, a post office and several shops.

The University of Karachi has the singular distinction of having teachers and students from all parts of Pakistan as well as a large student population from the Middle East, Iran, Turkey, South East Asia and Africa. Several languages including the four main regional ones of Pakistan can be heard on the campus. The medium of instruction at the university is both Urdu and English. Tables 8-9 give the data about the regional distribution and socio-economic level of the university students.

On the campus we have three-year Honours School and two-year M.A./M.Sc. courses, besides provision for M. Phil. and Ph.D. and several Certificate and Diploma courses. Besides specialized courses for the Honours and Masters' degrees, students have compulsorily to pass three courses out of the prescribed courses in Islamic Ideology, Urdu, Pakistan Movement, Functional English and Natural Science. Tables 10-12 given the enrolment figures for all these courses.

At present, about 6,000 students are enrolled in the various

TABLE 8. *Regional Distribution of Students Department-wise* (1974)*

Departments	Sindh		Punjab		NWFP		Baluchistan		A. Kashmir		Foreigner		Tribal Area	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Arabic	78	48	18	9	4	—	2	—	1	—	1	—	—	—
Bengali	2	3	1	—	—	—	—	—	—	—	—	—	—	—
English	16	50	5	4	4	—	2	1	—	—	—	—	24	6
Economics	175	171	47	2	3	—	4	—	2	1	—	1	—	1
History (Gen.)	38	39	5	4	—	—	—	—	—	—	—	—	—	—
Islamic hist.	33	91	9	3	4	1	—	—	1	1	—	3	—	1
Intern. rel.	68	96	17	7	7	—	7	1	—	—	—	—	—	—
Journalism	25	90	12	7	3	1	—	—	—	—	—	—	—	—
Library science	52	79	14	7	3	—	2	—	—	—	—	—	—	1
Persian	9	18	5	2	2	—	1	—	1	—	—	—	—	2
Political science	73	135	13	8	7	1	4	—	—	—	2	—	—	2
Philosophy	15	12	4	1	—	—	1	—	—	—	—	—	—	—
Psychology	28	119	6	11	2	1	—	2	—	1	—	1	—	1
Sociology	9	144	14	4	5	—	1	—	1	—	1	—	1	—
Social wk.	23	84	7	8	1	—	—	—	—	—	2	—	—	1
Sindhi	108	63	23	4	2	—	—	—	—	—	—	—	—	1
Urdu	38	120	8	4	—	—	—	—	—	—	—	—	—	—
Isl. learning	16	111	14	17	2	—	2	3	—	—	1	—	—	—
App. chemistry	74	7	30	—	2	—	—	—	—	—	—	—	—	—
App. physics	53	2	8	—	—	—	—	—	—	—	1	—	1	—
Botany	64	121	14	2	—	—	—	—	1	1	—	—	—	—

	Arabic	Sindhi	Persian	Gen. Sci.	Math.	Eng.	Sc. Eng.	Med.	Law	Bus. Adm.	Pharmacy	Commerce
Biochemistry	35	69	10	2	1	7	—	—	—	—	1	—
Chemistry	140	103	43	3	5	—	2	—	—	—	3	—
Geography	53	48	8	—	—	1	8	—	—	—	—	—
Genetics	22	47	6	—	—	1	—	—	—	—	—	—
Mathematics	339	119	115	1	7	1	—	1	1	—	—	—
Microbiology	24	84	8	4	—	1	3	—	—	—	—	—
Physics	92	15	26	—	1	—	1	—	—	—	—	—
Physiology	33	66	8	2	—	—	—	—	—	—	—	—
Geology	56	5	14	1	1	—	—	—	—	—	—	—
Statistics	107	28	30	—	10	—	1	—	—	—	4	—
Zoology	67	121	17	7	1	—	1	—	—	1	1	—
Marine biol.	—	2	1	—	—	—	—	—	—	—	—	—
Pharmacy	440	170	67	5	8	—	10	1	—	—	3	5
Commerce	11	4	5	1	2	—	—	—	—	—	—	2

*Enrolments in Arabic, Sindhi, Persian and Gen. History are inflated because certificate and Diploma students are also included.

TABLE 9. Students' Parents/Guardians Occupations (1974)

Occupation	Students' Origin												Tribal Area			Azad Kashmir		
	Sind		Punjab		Baluchistan		NWFP		Foreigner		M	F	M	F	M	F	M	F
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Service	1197	1363	320	79	23	9	26	6	12	2	3	0	3	0	3	0	0	
Business	433	455	101	18	11	2	17	0	12	6	1	0	0	1	0	1	0	
Professions	206	247	44	16	4	0	9	0	1	1	0	0	0	0	0	0	0	
Teachers	89	114	26	5	0	1	9	1	0	0	0	0	4	0	2	0	0	
Landlord	58	10	32	0	7	0	14	0	0	0	0	0	0	0	0	0	0	
Self-supporting	83	11	18	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
Not given	348	306	93	11	12	2	13	0	22	5	2	0	0	0	3	0	0	
Total	2414	2506	633	130	57	14	88	7	48	14	10	0	12	0				

TABLE 10. *Student Enrolments in the Faculties—Faculty of Arts, Commerce and Islamic Studies, 1975*

Department	B.A. (Hons)			M.A.	M.A.	Total
	1st Yr.	2nd Yr.	3rd Yr.	Prev.	Final	
Arabic	2	1	1	8	6	18
Bengali	—	—	1	1	1	3
English	36	18	20	40	27	141
Economics	89	86	75	122	131	503
Gen. history	13	6	6	27	17	69
Islamic history	17	16	12	46	31	122
Islamic learning	28	23	13	38	30	132
Int. relations	42	34	17	51	42	186
Journalism	24	14	8	31	27	104
Library science	—	—	—	82	47	129
Pol. science	39	57	29	56	73	254
Psychology	44	19	19	43	32	157
Persian	1	2	1	4	—	8
Philosophy	7	—	2	12	5	26
Sindhi	7	—	—	10	3	20
Sociology	35	25	23	59	27	169
Social work	22	17	5	35	15	94
Urdu	58	18	14	29	14	133
Commerce	—	—	—	40	26	66
Total	464	336	246	734	554	2,334

TABLE 11. *Student Enrolments in the Faculties—Faculty of Science and Faculty of Pharmacy, 1975*

Department	B.Sc. and B. Pharmacy			M.Sc. Prev.	M.Sc. Final	Total
	1st Yr.	2nd Yr.	3rd Yr.			
Applied Chemistry	44	27	19	—	6	96
Applied Physics	—	—	—	53	—	53
Bio-Chemistry	44	19	23	10	10	106
Botany	73	25	19	68	2	187
Chemistry	41	23	36	140	26	266
Geography	17	6	5	12	7	47
Geology	38	47	18	9	3	115
Genetics	—	—	—	30	—	30
Mathematics	56	140	88	44	87	415
Micro-Biology	30	22	31	31	15	129
Physics	91	30	21	79	23	244
Physiology	40	26	15	3	12	96
Statistics	37	21	24	31	52	165
Zoology	50	31	20	56	11	168
Pharmacy	170	120	158			430
Total	731	519	477	566	254	2547

TABLE 12. *Student in Certificate and Diploma Courses (1975)*

<i>Certificate in</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>
Arabic	105	62	167
Bengali	3	—	3
French	62	32	94
German	28	4	32
Hindi	6	—	6
Italian	13	4	17
Mathematics	42	52	94
Persian	8	3	11
Russian	11	1	12
Spanish	14	3	18
Sindhi	124	75	199
Turkish	19	13	32
<i>Diploma in</i>			
Sindhi	8	2	10
Urdu Special	2	—	2
Statistics (PG Diploma)	10	—	10
Indian Studies (-do-)	3	—	3
Special English	1	1	2
Total	459	253	712

teaching departments on the campus. The majority (54 per cent) of the students at the Faculty of Arts are girls. There are four cadres of teachers: professors, associate professors, assistant professors, and lecturers at the University. Among the 34 full professors, there are only two women. There are five female associate professors and out of the assistant professors and lecturers whose total number is about 336, the number of women is about 96. Table 13 gives the distribution of teachers in different departments.

Among the 1009 non-teaching employees, there are only two women. A large number of the non-teaching employees is made up of clerks, peons, laboratory attendants, drivers, store-keepers, typists and library helpers. There are only 30 officers and the rest are all subordinate staff. The large number of non-teaching employees may be taken to be the service personnel and represent an independent community separated from teachers and students in terms of interests and problems.

The administrative structure

It may not be out of place here to briefly describe the structure of the present university administration. Since the basic features of all the University Acts are the same, we give below the structure of the University of Karachi. Other universities have similar administrative structures.

The University of Karachi was reconstituted under the Karachi University Act of 1972 enacted by the provincial legislature of Sind. Under the provisions of the Act, there is a large deliberative body called the Senate with the powers to approve the budget and decide questions of major policy. The executive body which deals with day-to-day administration is called the Syndicate.

The Senate has a large membership (about 150), consisting of all university professors, chairmen of university departments, elected university and affiliated college teachers, students representatives, representatives of the university graduates and chairmen of boards of high schools, intermediate and technical education. The university Syndicate has a membership of 22 consisting of teachers' and students' representatives, five members of the provincial legislature, one high court judge, two prominent persons in the arts and sciences, the Education Secretary of the Provincial Government and the Chairman of the University Grants Commission.

There is an Academic Council consisting of all professors,

TABLE 13. *Number of Teachers in the Department of Various Faculties on the Campus*

<i>Department</i>	<i>Profes-sors</i>	<i>Assoc. Prof.</i>	<i>Asstt. Prof.</i>	<i>Lectu-rers</i>	<i>Total</i>
Arabic	1	—	3	1	5
Bengali	—	—	—	1	1
English	2	2	6	6	16
Economics	1	4	6	9	20
History general	1	1	4	2	8
A. Islamic history	1	1	5	3	10
International relations	1	2	3	3	9
Journalism	1	1	2	2	6
Library science	1	1	3	3	8
Persian	—	2	2	1	5
Political science	1	2	5	5	13
Philosophy	—	4	2	1	7
Psychology	1	2	3	4	10
Sociology	1	2	4	4	11
Social work	—	—	5	3	8
Sindhi	1	1	1	2	5
Urdu	2	1	6	1	10
Applied chemistry	—	2	3	7	12
Applied physics	1	—	2	5	8
Botany	2	4	9	7	22
Bio-chemistry	1	3	8	6	18
B. Chemistry	2	8	13	13	36
Geography	2	1	4	3	10
Geology	1	2	10	2	15
Genetics	—	1	3	2	6
Mathematics	1	6	8	9	24
Microbiology	1	2	11	12	26
Physics	1	4	8	12	25
Physiology	1	1	4	5	11
Statistics	1	3	5	8	17
Zoology	2	3	10	5	20
C. Islamic Learning	1	1	6	5	13
Pharmaceutics	1	1	2	4	8
D. Pharmaceutical chemistry	1	1	6	2	10
Pharmacology	—	1	1	2	4
Pharmacognosy	—	—	2	1	3
Total	34	70	173	163	440

chairmen of university departments, and university and college teachers' representatives. The Academic Council deals with all academic matters. However, there are committees of courses for individual academic disciplines consisting of senior teachers and experts from outside. These committees are grouped together into boards of Faculties of Arts, Science, Islamic Studies, Pharmacy, Business Administration and Commerce, Engineering, Education, Law and Medicine. Each Board of Faculty elects its Dean who is the head of the faculty and to whom every chairman of the departments in the faculty is responsible.

Besides these statutory academic and executive bodies, there is a Finance and Planning Committee consisting of two of the deans, one representative of the Syndicate, the Treasurer, and the Finance Secretary of the Provincial Government. This committee examines all financial proposals as well as the budget prepared by the Treasurer. Its decisions have to be confirmed by the Syndicate. The Discipline Committee of which the Students' Union President is also a member decides matters relating to breaches of discipline by students. An Affiliation Committee is responsible for inspecting affiliated colleges. It recommends their affiliation or disaffiliation to the Academic Council.

There is a Selection Board consisting of the Vice-Chancellor as chairman and the Dean of the faculty concerned, chairman of the teaching department concerned, one member of the Syndicate, the chairman or member of the Public Service Commission and two men of eminence in the arts and sciences. The Selection Board considers applications received in response to public advertisement and recommends to the Syndicate names of suitable candidates for appointment.

There is also an Advanced Studies and Research Board on which all the deans and three professors and three teachers with research qualifications are represented as members. The Board advises other authorities on all matters connected with promotion of research in the University. It also admits candidates for M. Phil. and Ph.D. degrees and appoints their supervisors and examiners. Institution of research degrees is also one of its functions.

The Governor of the province is the Chancellor and the provincial Education Minister, Pro-Chancellor of the university. The Chief Executive Officer of the university, however, is the Vice-Chancellor appointed by the Chancellor for a term of four years. Thus the pro-

vincial government gets some measure of control over university affairs, though legally the university is regarded as an autonomous body. In a recent amendment of the Karachi University Act (18 March 1976), a new post of Pro-Vice-Chancellor has been created and the Treasurer has been replaced by Finance Director under whom a Bursar and an Accounts Officer will form the nucleus of the financial management of the university.

The University of Karachi operates under the general guidance of the University Act. The Senate, Syndicate and the Academic Council also frame statutes, regulations and rules which regulate the academic and administrative actions of the different functionaries of the university.

On the teaching side which constitutes the various departments of studies, there are nine faculties, each under an elected dean. The deans supervise, guide and evaluate the work of the chairmen of the various departments in the faculty. The dean also has his own offices which consist of sections on syllabus, admissions, attendance, scholarships, fellowships and studentships. Besides, records of examination results are also kept in this office. The deans are directly responsible to the vice-chancellor. However, being elected to this office, the deans also have to satisfy their constituency, viz., the members of the faculty.

The university maintains a large library managed by a university librarian with a large number of subordinate staff to serve the needs of students and teachers. The librarian is placed in rank between a professor and an associate professor and is an ex-officio member of the Academic Council and the Senate.

On the non-teaching side which constitutes the main administrative unit of the university, there are three main officers.

(1) *The Registrar* keeps the seal of the University. He is the liaison between the university and the public. He is also the main administrative officer of the university responsible for the security of the buildings, and for the maintenance of law and order on the campus. In addition, the Vice-Chancellor may assign to him any responsibility relating to the non-teaching personnel of the university. The Registrar also acts as the Secretary of the Academic Council, the Syndicate and the Senate. He is responsible for recording the minutes of their meetings.

(2) *The Treasurer* is the head of the Accounts office and is responsible for preparing the budget. He also acts as the Secretary

chairmen of university departments, and university and college teachers' representatives. The Academic Council deals with all academic matters. However, there are committees of courses for individual academic disciplines consisting of senior teachers and experts from outside. These committees are grouped together into boards of Faculties of Arts, Science, Islamic Studies, Pharmacy, Business Administration and Commerce, Engineering, Education, Law and Medicine. Each Board of Faculty elects its Dean who is the head of the faculty and to whom every chairman of the departments in the faculty is responsible.

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of the Finance and Development Committee. He maintains the accounts and keeps the Vice-Chancellor posted on the status of university finances. He is the financial adviser to the Vice-Chancellor. He has a Purchase Officer under him who makes most of the purchases for the university offices and teaching departments. Under the recent amendment, a Finance Director has replaced the Treasurer and has become responsible for the entire financial affairs of the university.

(3) *The Controller of Examinations* is an officer of equal rank with the Treasurer and the Registrar. He is entirely responsible for the conduct of various university examinations. He makes the necessary arrangements for the examinations, despatches scripts to examiners, prepares and declares the results after approval by the Examinations Committee presided over by the Vice-Chancellor. The Controller of Examinations also acts as the Secretary of the Unfair Means Committee which decides cases of examinees caught while involved in unfair examination practices. Under the academic reorganization to introduce the semester system, the Controller only arranges B.A./B.Sc./B.Com., LL.B., B.E. M.B.B.S. and M.A. examinations for external candidates.

Besides these three officers who are a part of the main bureaucratic structure, there is a university engineer responsible for the construction, supervision and maintenance of university buildings and other properties. There is a medical unit with three medical officers. These two offices, though part of the staff organization work under the general supervision of the Registrar.

There has recently been a great deal of decentralization of the university administration particularly in relation to the academic staff. The teachers and students deal with the chairman of the department and beyond him with the deans of the faculty. The departments are linked with the Vice-Chancellor through the deans. The non-teaching staff, both officers and men have very little say in academic matters, neither are they in any manner connected with decision-making.

The University of Karachi has under its jurisdiction three categories of academic institutions, *one* is the number of teaching departments located on the campus and under the direct administrative control of the university. There are 38 teaching departments grouped under four faculties. The *second* category is that of constituent colleges. A constituent college is a part of the university but

with a separate sub-administrative unit. Its teachers are university employees but with a separate Board of governors chaired by the Vice-Chancellor. The university Syndicate sends one member to this Board. The Institute of Business Administration is a constituent college of the Karachi University. The *third* category consists of affiliated under-graduate arts and science colleges as well as the engineering, medical and the law Colleges. The College of Education also falls under this category. These colleges are administratively placed under the Government Department of Education. The university has only academic control over them with no say in their administration. The Academic Council approves their syllabi of Courses and the Controller of Examinations conducts their degree examinations. The University of Karachi awards the appropriate degrees to their examinees.

3 The University's Role in National Development

Problems of assessment

There are three conditions under which a university's role in the nation's development can variously be assessed. *One*, through manpower planning the policy-makers identify the sectors of the national life and determine the manpower requirements for each sector. The universities direct their admissions policy and research efforts so as to provide the government the needed manpower, the skill and expertise and research studies relevant to national goals. *Two*, the policy-makers seek advice and consultation from university professors who are thus involved in policy-making at the national level. The professors' advisory role benefits the students since teaching and research become more relevant to national development objectives. *Three*, the universities are deliberately kept away from the mainstream of national policies which are mostly directed by the bureaucrats. In such a situation the university has no choice but to carry on its statutory obligations of teaching and producing certificate and degree holders who ultimately are employed by the government but are necessarily incapable of making any significant contribution to the national development except to run the bureaucratic machinery at different levels. In such cases, the government looks for foreign expertise and advice for their development and policy planning. Where this happens, the universities are placed at a disadvantage since the bureaucrat is either hostile or apathetic to the research projects and plans of the universities. Universities have often been handicapped in their development because of the indifference and apathy of the civil servants who control the funds allocated to universities.

In order, therefore, to assess the contribution of universities to Pakistan's development, we have to examine the conditions under which they have had to operate during the last twenty-nine years. It is to be noted that the first condition involving manpower plan-

ning has never existed in Pakistan. As has been noted earlier, man-power planning has remained a pious wish. Unfortunately again, the second condition of consultation and advice by university professors was never tried on a systematic and planned basis in Pakistan until 1971. There may have been occasional cases where a professor because of his political influence or personal contacts with bureaucracy was invited for advice or given a research contract, but this would be an exception rather than the rule.

It is unfortunate that in Pakistan bureaucracy had the upper hand in policy formulations from the very beginning. In the formulation of the first five-year plan, universities were not consulted and the only contribution that the universities can be said to have made in the designing of the plan was to supply economics graduates to do the spade-work. During the Ayub regime (1958-1969), the universities were relegated to a subordinate position and lost their autonomy with the promulgation of the University Ordinance. During this decade the civil servants were fully in control of the bureaucratic machinery and acted both as policy-makers and implementers of policies. They were the chief economists, atomic scientists, educationists and experts in other fields. The university professor was branded as the idealist who did not know the real problems of the nation were. This necessarily led to the import of foreign experts and generated a sense of isolation and indifference in the university teachers and students. The frustration ultimately led to nation-wide agitation against the regime about which mention has been made earlier.

Historically, therefore, the universities in Pakistan were not permitted to make any significant contribution to national development except through sending their graduates to government jobs where they were needed for running the government machinery. There were very few research grants and university research was confined to academic and professional areas in each discipline. It was only in 1972 when with the advent of New Education Policy and enactments of the University Acts fresh air removed the academic suffocation and Universities felt almost a sense of rebirth.

This historical perspective is necessary to describe the role of the University of Karachi in national development. Another fact that may be noted for record is that until 1961, the University of Karachi was the Federal University but in 1961 when the capital of Pakistan was shifted to Islamabad, the federal character of the university

was taken away and the University Ordinance placed all the universities of Pakistan on the same level. In 1965, a Federal University was established at Islamabad and the University of Karachi was placed under the jurisdiction of the West Pakistan (provincial) government and later under the government of Sind. Presently, the University of Karachi is one of the two universities supported by the Government of Sind, the other being the University of Sind at Jamshoro about 90 miles east of Karachi city.

In *The University in Transition* Perkins (1966) describes the three-fold mission of the university as (i) the acquisition of knowledge (research), (ii) the transmission of knowledge (teaching), and (iii) the application of knowledge (advice and consultation service to national and other agencies). We may, however, give a note of caution about these goals in that the concept of public service and the university's responsibility to society is relatively new and in seeking to fulfil these obligations, the university should strive to ensure that the advice and consultation provided are of high quality and great care should be taken not to let the university become a mere public service centre. There is, however, general agreement on the first two goals of a university, i.e. teaching and research. In the following pages, we shall attempt to describe and highlight the role of the University of Karachi in terms of the three goals of *teaching, research and application*.

The contributions of an academic institution can best be assessed either by the beneficiaries or by those expected to make the contribution. Since these two groups are in the best position to know, we conducted open-ended interviews of about 35 teachers and five student leaders of Karachi University. To begin with, therefore, we present ideas of various categories of teachers and a few vocal and knowledgeable students on the role of Karachi University in national development. These views are both positive and negative, but the general impression one gets is one of qualified agreement that the university has been playing a role in national development; for example, the statement that "in the way that education itself is a part of the productive process, the University is playing a role."

University of Karachi's role in national integration was projected as "the University does represent different groups, regional groups both among teachers and students. Creating understanding and fellow-feeling among such diverse groups is itself a contribution."

Character-building among students was also considered as con-

tribution and a significant role. Undoubtedly, a major contribution of the university in its transmission of knowledge is to prepare students for employment and service to the nation, although many teachers wished for more co-ordination and communication between the University and policy-making bodies.

It was rightly pointed out by one teacher that "we are making some contribution but it is not easily identifiable."

Another teacher thought that "at present we are isolated and do not realize that we have to play a role in nation-building. The university should take education to the community through mass-media and other platforms. The public can thus benefit as much as the students."

A negative view of the University's role was expressed thus: "We educate but pay little attention to character-building. There is no corporate life and no communication among teachers. Students are on a different wave length. This can hardly help the University play its role."

A sharper criticism was voiced by another teacher. "The overall performance is poor. No department either in arts or sciences has done anything remarkable. We are mere academic technicians. We have failed in shaping our national character and we are often unaware of national problems."

Another view pinpoints the lack of manpower planning. It says, "students of a certain level come to a certain type of building and go back with smatterings of a certain subject. M.Sc. (Physics) may be working in a bank. What use is Physics to him or to the country?"

One teacher very plainly told us that "Universities have failed to fulfil their role in national development. They have not affected decision-making in the country." Such views, however, are more a criticism of the national planners than of the university. Teachers also complained that in spite of their involvement with researches on economically relevant aspects, they do not feel that the recommendations of their researches were even implemented. This credibility gap between the university teachers and relevant development agencies makes them indifferent and frustrated.

Besides teachers' views we had student leaders who gave their straight-forward views on national development and the university's contribution to it. They felt that "the University of Karachi is capable of making real contribution to national development but such

contributions and participation at the national level does not seem to be encouraged. As a result, the role of the University has not been up to their expectations. The students, the University has produced, have not done anything to preserve the heritage the nation cherishes."

These views have been randomly selected and represent all shades of opinions. As was indicated earlier, there is definite reservation about the significance of the university's role in national development. It may also be noted that different interviewees had different notions of national development ranging from economic and physical progress to moral regeneration and psychological change. It is in terms of these different notions that they have viewed the role of the University of Karachi in national development. It would therefore, not be far wrong to say that within the context of the prevailing relationship between the University and policy-makers, the University of Karachi has not made a mean contribution to national development.

We have presented these interviews to indicate what the beneficiaries (students) and the contributors (teachers) think of their own role in national development. They seem to be quite frank and fairly objective. With this perspective presented, we proceed to describe the role of the University of Karachi in terms of the three stated goals of a university, i.e. *knowledge dissemination, knowledge generation and knowledge application*.

The University of Karachi, though chartered in 1951, started teaching from the academic session 1953-54. It took over the degree colleges in Karachi from the University of Sind which was shifted to Jamshoro. The degree colleges teaching undergraduates became affiliated to the University of Karachi. Initially, only a few traditional departments were started at the Master's level and the number of students was small. However, for a few years the only role the university played was that of dissemination of knowledge through teaching. There were few senior and qualified teachers, the majority having come from the local colleges. Research did not begin immediately and the teachers, apart from teaching their classes, gave talks and participated in discussions on the radio. A few teachers wrote articles in Newspapers in Urdu and English.

During its first few years the University was housed in a few rented buildings and lacked a good library and space for a laboratory. It was only when the University was shifted to its present site

in 1960 that the University activities started expanding in terms of the number of students and appointment of teachers in various departments. In the beginning, the University of Karachi had only two Faculties of Arts and Science on the campus, with only a few traditional departments in each. In the Faculty of Arts we had Departments of Philosophy, History, English, Urdu, Persian, Arabic, Psychology, Economics and Political Science. In the Faculty of Science there were Departments of Physics, Chemistry, Mathematics, Geography, Zoology and Botany. These departments not fully equipped and lacking qualified teachers just managed to fulfil their role of teaching till about 1960 and very few teachers had any time to go in for research and publication. We therefore, may, consider this period as the first phase of the University of Karachi when its role as a university was not very significant except that it provided manpower for the government. The University of Karachi does not have a record of how many of its alumni were employed and where. But since the admissions to the degree courses were not planned in terms of any definite manpower requirements, it may be supposed that students went into different government departments which would need their type of qualifications and training. A few competed for civil service jobs and were called upon to fill higher echelons of the administration in the bureaucratic hierarchy. Many of them were employed as teachers in schools and colleges. In all these capacities, the alumni of the university performed their role as nation-builders. There were no consultation or advisory jobs for teachers during this period. But this was in a period when no university in Pakistan had much to do with policy-making.

The University of Karachi became fully functional after 1960. The number of students swelled, qualified teachers joined the faculties of the different departments and library and laboratory grants were made adequate. The campus became alive with curricular and extra-curricular activities. It now wore the look of an academic institution where students and teachers were engaged in the pursuit of knowledge.

(a) *Dissemination of knowledge.* The number of teaching departments increased after 1960. New Faculties of Islamic Learning and Pharmacy were established with only one department in each faculty. Later on, the Pharmacy Faculty created four departments and plans for expanding the Islamic Learning Faculty

are afoot. New departments created in the Faculty of Arts were Sindhi, International Relations, Islamic History, Sociology, Social Work and Library Science. In the Faculty of Science departments of Applied Physics, Applied Chemistry, Statistics, Genetics, Biochemistry and Microbiology were opened during this period. Institute of European Studies in the Faculty of Arts and Institute of Marine Biology in the Faculty of Science have been initiated by the Central Government. An Institute of Business Administration started as a constituent college and is now the Faculty of Business Administration and Commerce.

These expansions in the academic programmes of the University were made after 1960 and some others, after 1971. The expansion reflects the increasing recognition of specialization in the University. All these departments have Master-Level teaching and are training students for the expanding requirements of the country. The number of students profiting from these specialized departments has increased beyond 6,000 since 1972.

Besides teaching students in degree classes, teachers are invited by many off-campus organizations and institutes as visiting lecturers. The National Institute of Public Administration (NIPA), the National Institute of Labour Administration (NILA), the Bank Training Institute, the Administrative Staff College and the Military Staff College and many other academic and training institutions depend on teachers from the University to run their training programmes. The Institute of Business Administration has started its own off-campus section in the city where business executives join the courses in the evenings.

It is only fair to say that insofar as its function of disseminating knowledge is concerned, the University of Karachi has performed its role and service to the nation with distinction. Its contribution to degree and non-degree teaching both in Karachi and outside Karachi in Quetta, Lahore and Islamabad has been of great significance.

It was after 1960 that the University of Karachi launched its campaign for due recognition to the national language, Urdu. Karachi had already experimented with teaching all academic subjects in Urdu and now has well-established Urdu arts, science and law colleges. The University of Karachi established a Bureau of Composition, Compilation and Translation (BCCT), whose avowed

goal is to promote Urdu as the medium of instruction at the university level. To this end, regular weekly meetings of each subject-committee began translating technical terms and concepts into Urdu. The Bureau has published several issues of a quarterly journal, *Jarida* containing translated terms and concepts. In addition, Urdu text-books in several disciplines written by University teachers have been published. But the greatest boost for Urdu came when the Academic Council of the University of Karachi passed the pioneering and historic resolution in 1964 to adopt Urdu as the medium of instruction at the University. This was with the sole purpose of working towards national integration through Urdu which was already the accepted national language of Pakistan.

The BCCT played an important role in providing translation facilities to teachers in Science departments. Early in 1966 the Bureau initiated a programme whereby teachers were provided monetary incentives to write their class lectures in Urdu. Many teachers subsequently used these written lessons to write textbooks for their courses. In these different ways the University of Karachi undoubtedly contributed to national integration through its devoted efforts to promote the national language so that it could replace English as medium of instruction.

(b) *Generation of knowledge.* The University of Karachi has been fortunate in attracting research-oriented teachers with adequate research qualifications. As a result, the research activities of the teachers have been significant and they have been able to obtain research grants from different agencies of the government. These grants have helped university in its major role of knowledge-generation for national development.

(f) *Faculty of Science.* The major part of research grants for the Faculty of Science came under Public Law 480. The Department of Botany undertook a pioneering study of the flora of Pakistan. About 80 volumes of this work have been published. This was the first time a comprehensive and systematic work on the flora of Pakistan was undertaken. The project is still on and because of this pioneering work, the Principal Investigator has been commissioned to supervise a similar research project on the flora of Libya. This is undoubtedly a significant contribution of the University of Karachi not only to national development, but also in providing expertise and research guidance to another friendly country.

Another research series under a PL 480 grant was initiated on

the grasshopper by the department of Zoology. The objective was to help the agriculture of the country to know more about grain-destroying insects. The research is still under way, but its results have been made available to the Agriculture Research Council of Pakistan.

Out of the Department of Zoology grew a new Institute of Marine Biology which is entirely devoted to research on marine life, particularly fresh-water fish. The Institute personnel have taken a several trips to the Arabian Sea for this purpose. The central government has now taken over the Institute and plans to make it one of the centres of excellence in the country.

The Department of Genetics was also an offshoot of the biological disciplines at the university. Research grants from PL 480 have also been supporting research in this department. The teachers have succeeded in developing better varieties of fruits through the use of new techniques of genetic research.

The Departments of Bio-chemistry and Microbiology also have been granted research funds for work on sewerage and pollution in Karachi. These researches are also underway and the results are being made available to Karachi Municipal Corporation (KMC) and Karachi Water Board.

The Department of Geography is engaged in research on geomorphology, archaeological sites near Karachi and on environmental perception and its impact on the location of industries in the country.

The Statistics Department has become a service department helping researchers both in biological and social sciences. A mini-computer installed in the department is heavily being used by various departments. The department is also working in close contact with the Central Statistical Office (CSO) besides training students for banks, industrial organizations and planning commissions. The students of the department also conduct small surveys on various problems in the city of Karachi.

(ii) *Faculty of Arts.* At the Faculty of Arts, research grants are not easily available. However, several departments have been able to obtain some research funds for their research efforts.

The Department of Psychology obtained research grants under PL 480 to conduct a 3-year research on Masculinity-Femininity and Psychological Adjustment in Pakistan. The major assumptions of the study are that in developing countries because of rapid socio-

economic changes the traditional sex-roles are being disturbed and this may lead to adjustment difficulties for men and women. The study will attempt to investigate these problems of adjustment in Pakistan.

Research on decision-making patterns in Pakistani families was supported by the Population Planning Council of Pakistan. The results have been made available to them.

The WHO commissioned a research project on the basis for the preference of fertility regulating methods. This was a cross-cultural study conducted in five countries. The results have been submitted to WHO, Geneva.

The departments of Sociology and Social Work have also been supported in research on family planning. One long-term research project relates to family structure and its role in decisions on planning of families. The research is still underway, but some of its results have already been published.

Another research project on relative acceptance of family planning methods is being written up for submission to the financing agency. The departments of Urdu and English have set up language laboratories where research and teaching on philology and phonetics are done. These two departments, besides awarding a M.A. degree in literature, also have degree courses on linguistics and train language teachers for schools and colleges.

The Department of Political Science has designed a course on local government and is planning to initiate short-term refresher courses on local government for government employees concerned with local government and rural development.

The Institute of Business Administration was commissioned to conduct research on the slums of Karachi. They have a long-term project in one of the slum areas—*Azam Basti*, a community of fishermen. The teachers from the departments of Sociology, Social Work and Geography are involved as research consultants on the project.

(c) *Application of knowledge.* No university in Pakistan has any consistent programme of advising the government or other agencies. Various departments of the government, however, call on individual university teachers for advice and help to solve their problems. The University of Karachi has had more than its share of such requests.

The Department of Statistics has a regular link with the CSO, KMC and the Planning Commission. They have conducted many

surveys for these organizations. Microbiology, Biochemistry and Pharmacy departments have their academic contacts with the Jinnah Post-Graduate Medical Centre and Pakistan Council of Scientific and Industrial Research (PCSIR).

The Departments of Mathematics and Physics prepared textbooks for intermediate classes for the Text-Book Board. The Department of Geography was asked by the Ministry of Commerce and Industries to prepare maps showing the location of industries in the country.

We have high quality—green stone in Baluchistan. The Department of Geology has been involved in helping to grade these stones and other mining products. They have given advice to several mining companies and the Bureau of Standards on collecting representative samples. The Department of Geology has also been training students in geological surveys for planning dams or tunnels. In addition, teachers have been called upon as advisers and consultants by the Water and Power Development Authority and their consultant engineers on several occasions.

The Department of Library Science conducted a survey on the reading habits of journalists and other professionals. The results of the survey have been published in book form book in Urdu and in English. The departments of Sociology and Social work have close contacts with the Population Planning Board and the Department of Social Welfare in the Government of Sind.

It is in these different roles that the University of Karachi has been contributing to national development. We have described in general the research activities of several departments in the Faculties of Arts and Science. In the pages below, we shall describe in some detail the specific contributions of four departments of the university. Three of these departments, viz. Chemistry, Economics and History are located on the campus, whereas the Department of Civil Engineering is at the N.E.D. Engineering College which is affiliated to the University of Karachi. For each of these departments we will describe the three functions of teaching (dissemination), research (generation) and advice (application).

(i) *Dissemination of knowledge.* The University of Karachi does not directly control engineering education which is located outside the campus and is administered by the Education Department of the Sind Government. The college offers instructions in civil, mechanical and electrical engineering. Unfortunately, we did not find much

evidence of research or an interest in research among the college teachers. Conditioned by their service rules as government employees, they do not disclose whether or not they are doing any consultation jobs. As government employees, they do not feel as free as the university teachers. Under rules they are not allowed to engage in any profitable professional activity. We therefore, will have to conclude that none of the engineering college teachers are performing the advisory and consultation function for any government agency except when it is made part of their job.

We have already indicated that engineering education is primarily confined to teaching students to become engineers and when these students pass out of the college, neither they nor the college authorities keep in touch with each other. There is hardly any mentionable research produced by the teachers in the Engineering College.

In our effort to find out about research publications from the teachers we drew a blank although most of these teachers have post-graduate qualifications (M.S.). For civil engineering, therefore, our description will necessarily be brief and confined only to some statistics of students enrolment.

Admission to Engineering College is made generally on merit and students with first division in I.Sc. or B.Sc. usually get into the college. However, there are some openings reserved for second divisioners desiring admission to the college. Admission to the Engineering College is quite an achievement because mere entry almost ensures a bright future. Even on the marriage market, engineers rank quite high, much higher than university lecturers. Admission to the college, therefore, becomes a political issue and different pressure groups in the provinces try to exert pressure for the reserved seats.

The table on page 104 gives the admission figures of the civil engineering students in the college during the last 15 years. We have no figures of those who passed out but since most of them ultimately get their degrees, we may assume that all those who get admitted also pass out as engineers. Most of these engineering graduates get absorbed in the various government projects. However, quite a few go abroad to the Middle East and Africa for jobs. Hence, we are also faced with a brain drain in the field of science and technology.

The Contribution of the Engineering College, particularly in Civil Engineering, is primarily in producing graduates to run the

<i>Sessions</i>	<i>No. Admitted to Civil Engineering</i>
1958-59	94
1959-60	90
1960-61	86
1961-62	100
1962-63	91
1963-64	110
1964-65	83
1965-66	96
1966-67	142
1967-68	137
1968-69	109
1969-70	99
1970-71	93
1971-72	69
1972-73	67
1973-74	75
1974-75	125
1975-76	125

building industry of the country. The teachers do not engage in non-degree teaching neither do they confess to any professional consultation on a paid basis.

(ii) *Generation of knowledge.* No teacher indicated any interest in research, neither have they had any publications to other credit.

(iii) *Application of knowledge.* In developing countries to-day there is a great spurt of building activity since housing for the people, offices for the government, plants for industries in addition to dams, bridges and railway tracks have to be planned and constructed. The immediate needs of the countries are in these spheres. It is, therefore, understandable that engineering colleges are primarily engaged in producing technicians rather than research-oriented engineering scientists. The developing countries for quite a few decades will need these engineers in the field rather than in the laboratories. However, research in cheap building materials and in the use of indigenous technology will be required side-by-side with implementation of building plans. The Engineering University in Lahore and the one planned for Karachi are likely to provide the country with the research that is needed.

The Department of Chemistry at the University of Karachi is one of its oldest departments, established on the old campus in the city

and shifted to the new campus in 1960. It has since branched off into (1) Department of Chemistry (2) Department of Applied Chemistry and (3) Institute of Chemistry. The Department of Chemistry is one of the largest departments at the Faculty of Science. The Department gives specialized training in Organic, Inorganic and Physical Chemistry.

(i) *Dissemination of knowledge.* The teaching in the Department of Chemistry started in the first two years of the establishment of the university. There is, however, no record of its students from the beginning and no record either of where the students are employed. The known avenues of employment for chemistry graduates are the Karachi Colleges, Council of Scientific and Industrial Research the Department of Chemistry itself and industries in Karachi.

Given below are the figures on student enrolment in the departments of Chemistry and Applied Chemistry from 1970 to 1974. These figures have been obtained from the departmental records. We may add that no teacher of the department does any non-degree teaching.

Student Enrolment

Academic Session	Chemistry				Applied Chemistry			
	B.Sc. (Hons.)		M.Sc.		B.Sc. (Hons.)		M.Sc.	
	Adm.	Passed	Adm.	Passed	Adm.	Passed	Adm.	Passed
1970-71	88	36	146	120	12	—	—	—
1971-72	36+							
	Failures	41	135	102	20	—	—	—
1972-73	46	38	123	109	25	8	—	—
1973-74	47	47	65+					
			Failures	79	49	16	7	7
1974-75	31+							
	Failures	37	167	123	45	35	15	15

Department of Applied Chemistry started with B.Sc. (Hons.) degree and its first batch passed out in 1972-73. M.Sc. classes started in 1972-73.

Besides, B.Sc. (Hons.) and M.Sc. degree, the departments admit students for M.Phil. and Ph.D. degrees. A number of M.Phil. students have completed their research. One Ph.D. Student, registered in 1971-72, submitted his thesis in 1975. The Institute of Chemistry does not do graduate teaching and admits Chemistry graduates for M.Phil. and Ph.D. Established in 1967 the Institute has also

helped M.Sc. students of Chemistry in their thesis research. The number of dissertations submitted for the award of degrees from the Institute of Chemistry are:

Ph. D.	3
M. Phil.	4
M. Sc. (Thesis)	29

Present student enrolment: One for Ph.D., 18 for M.Phil. and 20 for M.Sc. (Thesis).

(ii) *Generation of knowledge.* The spheres in which chemistry can contribute to national development are many and varied. For a country like ours, we need research information on the chemistry of indigenous products and their utility.

The economic development of a country depends upon the development of chemical industries concerned with the large-scale production of substances. Production of food materials and other natural products may be increased by using suitable fertilizers. The natural resources of manures are not enough to meet the increasing demands and as such artificial fertilizers have to be incorporated.

The Impact of polymers upon our daily life is far-reaching. Polymers are extensively used for making artificial fibres, tyres, varnishes, paints and other numerous materials.

Metals are the basic materials for the construction of machines. The present age emphasizes the need for the development of metallurgical industries. A knowledge of chemistry provides alternate means, of good quality and in large quantities.

For the prevention of epidemics and for maintenance of a high standard of health, we require medicines and vitamins. Natural alkaloids, drugs and vitamins cannot meet the extensive demands and synthetic products are being used as substitutes.

The teachers and research students of the chemistry department are engaged in research along the following lines.

Photochemical kinetics. The effect of the concentration of dye, reductant and hydrogenion activity were studied to find out the optimum condition for quantum yield. The problem is of academic and applied nature. The problems presently under investigation is the effect of ion strength on the rate of reaction between potassium persulphate and potassium iodide with a view to understand the role of ion strength on the kinetics of this reaction and to evaluate the relationship between ionic strength and thermodynamic and quantities and energy of activation.

Studies in catalysis are directed to investigate the theory of catalysis with special reference to the sulphuric acid industry. Another side of the interest is the removal of colouring matters from cane sugar juice by absorption on activated charcoal prepared by suitable process. Kinetic studies of complex formation in solution are designed to investigate kinetically ion association of various divalent transition metal ions with inorganic anions.

Fertilizers. Another research study concerns the complex phosphates and their structures and the reaction of tricalcium phosphate ores with sulphur dioxide under different conditions of temperature, pressure, time and the rate of passing sulphur dioxide. The effect of assimilation of mineral fertilizers by plant with reference to phosphate fertilizer is part of this study.

Steroid hormone. Another study deals with the isolation, purification and recovery of some of the neutral compounds possessing the steroid nucleus. Such compounds are being studied in locally available plants having medicinal application.

Structure-activity relationship. Studies of structures and the relationship to their biological activities are important in the field of organic chemistry. It is known that phenyl-1-2picolyl carbinol possesses some mild analgesic property. It therefore, is expected that various derivatives of this molecule may also show the related type of activity and thereby can be used in medical therapy.

Studies in polymer chemistry. Not much research on this subject has been reported from Pakistan. The Department has pursued some work on kinetic studies of anionic polymerization of methyl methacrylate. Current research is related to the properties of aqueous cyanide which is easily oxidized to cyanate or cyanogen and, therefore, can reduce other species.

It is now planned to use cis variety of cinnamic acid instead of trans and to investigate the difference in the behaviour of cis and trans isomers in entering into copolymerization. The plan also includes correlating the cinnamic acid content of the copolymer with its solution properties with special reference to viscosity.

The limpid rosin that exudes from incisions cut in the bark of living pine trees is subjected to steam distillation and then non-volatile residue when cooled sets to yellowish glassy material known as rosin or colophony. It is used in low-grade soaps, varnishes and in plastic industries.

Another research aims to look for the utility of abietic acid in

polymers. Abietic acid may easily undergo epoxidation by just bubbling oxygen into its solution and the epoxides are supposed to condense easily with the protic solvents. It may give rise to some useful polymers.

Complex cyanides. This is a study of the complexes of transition metals using cyanide ion as ligand. It is felt that there is an obvious need for accurate determination of formation constants and enthalpies and entropies of formation in solution. On the synthetic side this study includes the preparation of new or poorly characterized complex cyanides and adducts of methyl iodide and copper and silver cyanide.

Carbohydrates. The major component in all vegetable products is carbohydrate. Presently turnips are being studied since they are known to have appreciable pectin contents. Attempts are under way to develop an extraction procedure under the mildest possible conditions. One method is to fractionate pectins from orange peel and turnip by improved method of fractionation which does not cause degradation. The results are encouraging.

Post-graduate Institute of Chemistry

This institute admits students for Ph.D. and M. Phil. only and conducts research into problems which are of national significance. The following is a brief description of its various projects.

(a) *Fertility control.* The institute has planned a research programme to discover a compound from indigenous sources to be used for fertility control. This will include both chemical investigation as well as physiological evaluation of the compound obtained from plant origin.

(b) *Cardiovascular diseases.* The roots of *Rauwolfia serpentina* have been used for such ailments since the days of Hakim Ajmal Khan. Chemical research were started on this plant around 1928 and an alkaloid ajmaline isolated from it and reported in 1931. During the last few decades, it has increasingly been used as a drug of choice in the treatment of heart ailments. It is now being manufactured on a large-scale in Germany for therapeutic uses.

Studies of the biochemistry of ajmaline and its metabolites are being undertaken to study the mode of cardiac action of the alkaloid.

Chemical investigation were carried out on barmal seeds in Germany around 1843 and they led to the isolation of two principal

alkaloids, i.e. harmine and harmaline. Subsequent studies, mostly by German and British scientists, resulted in the elucidation of their chemical structure.

The Institute is now reinvestigating its alkaloidal constituents using modern methods and techniques. As a result of these studies a new alkaloid, barmidine has been isolated in pure form. Studies are now under way to convert harmidine into ajmaline-like molecules which possess antiarrhythmic activity. If the molecule is successfully produced it would subsidize the production of ajmaline and possibly large sums of money in terms of foreign exchange may be earned.

Studies are also in progress for the isolation of the structure of some of the more important plant alkaloids.

Another direction for Institute researchers relates to Bhilawanol in relation to its activity as anti-rheumatic agent. Its active principal bhilawanol has been isolated and its structure as a catechol derivative has been established. Profiting from the findings, the bhilawan resinol has been extensively used in industry for the production of paints and plastics but nothing yet has been done on its therapeutic aspect which is now under study by the Institute of Chemistry.

(iii) *Application of knowledge.* As indicated earlier, there has not been any consistent and systematic demands or requests for advice from any of the national development agencies or industrial houses.

The Department of Chemistry, therefore, has been confined in its contribution only to teaching and research. Its only liaison has been one of research with the Pakistan Council of Scientific and Industrial Research, whose scientists are engaged in government-supported research and have number of commercial products patented for general use.

Any advice sought by the government or private industries is done on a personal basis and through one's contacts. Such advisory associations have not been entirely lacking.

There is a growing demand for economics to be brought closer to the needs of the national economy, and, therefore, the Department of Economics has tried to help evolve a system of teaching and research which may ultimately succeed in harnessing the university manpower for the attainment of optimum economic order in Pakistan.

(i) *Dissemination of knowledge.* During the past decade, the pri-

mary activity of the department has been related to a revision of the syllabus of courses in conformity with the latest developments in economics. The first batch of students schooled in the new courses passed out in 1970.

The quality of teaching staff has also been considerably improved through fresh appointments and advanced training in its teachers.

The following figures give the number of students enrolled in the department for B.A. (Hons.) and M.A. degrees during 1970-74.

Academic Session	B.A. (Hons.)		M.A.	
	Appeared	Passed	Appeared	Passed
1970-71	48	34	131	65
1971-72	82	45	101	66
1972-73	90	65	169	127
1973-74	60	31	99	67
1974-75	80	54	162	132

These figures do not include the number of candidates who appear in the M.A. examinations as External candidates and are usually employed and cannot be regular students. In several departments of the Faculty of Arts where no laboratory or field work is required, the University of Karachi allows external candidates to take the university examinations.

During this period, the Department of Economics also introduced certain organizational changes such as corporate teaching by associating experts from institutions of specialized research.

Most of the teachers in the department are invited to lecture to non-degree trainees in government institutes, banking colleges and army establishments. The Institutes of Public and Labour Administration draw upon these teachers regularly for their in-service trainees who come for short courses.

No figures on the employment of economic graduates are available, but it is certain that those with at least a second-class degree are employed in banks, planning commissions and various research organizations. There is a great pressure for admission in the economics department since jobs are more or less assured after attaining the degree.

(ii) *Generation of knowledge.* The department is conducting

research primarily in the field of applied economics with a definite bias in favour of problems of developing economics. This involves a careful computation analysis and interpretation of economic data designed to formulate and appraise national economic policies. Research of this kind is being given priority by the Department of Economics.

The following brief topical description of research efforts undertaken by teachers would substantiate the above statements.

Problem of investment in human capital. This relates to the study of manpower potential and its utilization with reference to requirements generated by development programmes in various sectors of the national economy.

Import substitution, export expansions and industrial growth in Pakistan (1965-75). Since industrial growth is the most strong and dynamic element for generating higher output, the nature of growth in this sector forms a most vital aspect of the study of economic development in Pakistan.

Industrial labour relations and economic development in Pakistan. The prime importance of the behaviour of industrializing elite group and the industrial labour force as well as the shortage of technical personnel cannot be relegated in the background. Studies conducted outside and generalizations made from them need to be tested in Pakistan. The elasticities of demands and supply of personnel have not yet been clearly measured and related to the behaviour of the two factors—the industrializing elite and the labour force responsible for rapid industrial growth.

Measurement of productivity in selected industries. These studies will furnish much needed data and will help in the calculation of technological co-efficient essential for investment planning in Pakistan.

Problem of planning in a market economy. The studies are related to an inquiry into specific problems of planning in a mixed economy.

There are several other studies undertaken by the teachers in the department which have been requested by agencies outside the university. One study is attempting to work out the optimum distribution of fertilizer input in the province of Sind. Another study is concerned with the urgent problem of the brain drain. This has been commissioned by the Bureau of Immigration, Government of Pakistan.

The Karacbi Municipal Corporation (KMC) has sanctioned a study on the octroi system, i.e. taxation on goods going out or coming into the municipal limits of Karachi. The study is concerned with the nature of octroi receipts, and would investigate the incidence of taxation.

One study is attempting to collect data about the hawkers and pedlars, the informal business sector. The KMC is also financing another study of urban financing and property taxation. Intermediate industries are also being studied by another teacher. The Karacbi Development Authority (KDA) is interested in finding out the housing demands of Karachi and has put up funds for the investigation by the Department of Economics.

Some of the publications by teachers include "Economic Planning for Agriculture" "Industrial Labour Relation in Pakistan," "Public and Private Sector Industries" and "Land Reforms in Pakistan."

A number of studies have been completed by the Applied Economic Research Centre and several are underway. Studies completed relate to shrimp industry, egg production in Karachi; and profitability and portfolio structuring of commercial banks in Pakistan.

Some of the results of these studies have given significant information. For example, in the informal sector study of hawkers and pedlars, it was found that the wages paid are comparable to those in the modern sector. The hawkers are providing a social service and the markets are competitive and quite efficient. Another study for the Ministry of Food and Agriculture was related to the analysis of the Ministry's survey on rural farms. One significant result showed that fertilizer on subsistence farms has almost zero productivity. This may explain why some rain-fed agricultural regions have had a low demand for fertilizer, despite federal subsidies.

In another study, new statistical techniques were developed to find exceptional performers in a group, for example, to locate exceptional farms in a sample or to identify unusually effective family-planning centres.

(iii) *Application of knowledge.* It should be obvious from the research contributions of the Department of Economics that the topics and areas selected are not only relevant to national development objectives, but also contribute significantly to national development. Most of these studies have been financed by outside agencies both from the public and private sectors. As to systematic

consultative and advisory service to the government, the position is the same as for other departments. No special consideration has been shown to the economists of the university.

Muslims from the beginning of their history have devoted great attention to the writing of history and have made their own contribution towards its development. History and historical traditions have played a notable role in the formation of the Pakistani nation and the establishment of Pakistan.

The Department of History is one of the oldest in the University of Karachi having started functioning in 1953. It had a good start since it was able to attract a number of highly-qualified teachers and thus maintain traditions of research and high academic standards.

(i) *Dissemination of knowledge.* The department offers Honours and M.A. degrees and provides facilities for research towards Ph.D. and M.Phil. degrees. Originally, courses were confined to the history of the Indo-Pakistan sub-continent, modern Europe and the history of Islam. It was later expanded to include archaeology and American history. Several groups of special courses in Indo-Pak. History, history of Europe and archaeology are available for the M.A. degree.

The original Department of History expanded its activities to an extent that two other departments had to be carved out of the department. These are departments of Islamic History and International Relations. These departments now offer full-fledged courses for Honours and M.A. Degrees in their fields of interest. However, with the bifurcation of the Department of History, the rush of students increased in the new departments and decreased in the parent department.

The following table gives the student enrolments in the department of General History of the years 1970-74.

Academic Session	B.A. (Hons.)		M.A.	
	Appeared	Passed	Appeared	Passed
1969-70	1	1	35	35
1970-71	7	7	26	21
1971-72	2	2	16	13
1972-73	5	3	18	11
1973-74	7	7	18	15

In addition, the department has so far produced seven Ph.D.

scholars and three M. Phil. students. Two other Ph.D. candidates are writing their theses. One of the Ph.D. Scholars was an American writing on the "contribution of the English Language press to the development of Pakistan Movement (1937-47)." Another scholar was from Egypt and wrote his thesis on "cultural development of Sind under the Umayyads and Abbasids."

The department also maintains an Archaeological Museum since 1966. This helps students to have a peep into the history, culture and past life of the people in the areas that now constitute Pakistan. It also helps in teaching of courses on archaeology with the help of items of the Indus Valley civilization, Gandhara Art and Moghul miniature paintings. The museum has original potsherds from Bhambore, Kot Diji and Amri (Sind). Some of these objects are casts of the original ones and some of them are original pieces.

The department, in addition to courses for Honours and M.A., also offers a Post-Graduate Diploma in Indian Studies and Certificate in Hindi. These are one-year courses and deal with the problems of modern India and her national language. However, the teachers seldom do non-degree teaching outside the university.

Muslim League Records

The Department of General History is deeply interested in the Muslim League Records which were transferred to the University of Karachi on 7 October 1966. This was a big event for the university as well as for Pakistan itself, for in these papers, is enshrined the authentic record of the struggle and organization of the Muslims of the sub-continent extending over half a century. The acquisition of these records became all the more significant and timely because these neglected records, once already salvaged from Delhi in August 1947 under dramatic circumstances, were again in imminent danger of being irretrievably lost due to the state of neglect in which they had been lying for several years.

In saving these records for posterity, the University of Karachi, has played a leading role. Dr I.H. Qureshi, the Vice-Chancellor, knowing as he did the great value and importance of these records, sought the personal intervention of the President and requested him to hand over the records to the University to enable it to take immediate steps for their preservation. The President recognizing the importance of the documents issued orders for immediate compliance. The records have since been sorted out by a team of

young scholars, and it will be possible to make them available to researchers after arranging, classifying and indexing them according to modern techniques.

The records constitute an autonomous section in the University Library which is looked after by a "high-powered" Committee with the Vice-Chancellor as its chairman.

Institute of Central and West Asian Studies

The department is closely associated through the members of its staff with the Institute of Central and West Asian Studies.

The main function of the institute is to organize research in the fields of history, philosophy, literature, art, archaeology, culture and social and economic institutions of Central and West Asia and explore the territorial and cultural links of Pakistan with these regions. The institute has an ambitious programme of publication in view. It will publish such source material as has not yet been published or which needs a new critical standard edition. It will also publish monographs, bulletins and journals.

As many of the members of the Department are qualified in the field in which the institute wishes to pursue higher research, the Department of General History expects to play a prominent role in it.

(ii) *Generation of knowledge.* Most of the research currently being done in the department relate to re-writing the history of the Indo-Pak sub-continent and within this broad area it is the Muslim period and the modern period which are largely attracting the scholars in the department. In the absence of MSS, the department has concentrated on procuring microfilms of original sources.

The first Chairman of the department was also the Chairman of the Board of Editors for "The History of Freedom Movement" to which most of the teachers of the department have contributed relevant chapters. The chairman contributed six chapters, two on Tipu Sultan and four on Syed Ahmad Shaheed and his movement. He has also published the text of *Fath-al-Mujahidin*, a manual of Tipu Sultan's army, and an English translation of *Tipu Sultan's Dreams*.

Two historical treatises on *Indo-Persian Relations During the Mughal Period* and *Calendar of Documents on Indo-Persian Relations* have been published by another teacher of the department.

The History of the Afghans in India and *The Social and Cultural*

History of Bengal in two volumes have been published by another teacher of the history department.

Another senior teacher of the department published *The History of the Arghuns and Tarkhans of Sind*. He is working on development of Sufism in Sind. He has also written the introduction to Diwan of Bayram Khan which has been published by the Institute of Central and West Asian studies.

Contributions have also been made to the *Encyclopaedia Persica* and the *Encyclopaedia of Islam*. In *Shamlu Letters*, another teacher has discovered a new source of Iranian diplomatic correspondence.

These researches and others done as Ph.D. dissertations by scholars in the department indicate the extent and scope of their coverage. The Institution of the Vizierate under the Delhi Sultanate, The History of Jaunpore and court life under the Nawabs of Ondh. These studies are significant in their avowed purpose of re-writing the Muslim period of Indian history. Their significance and importance for the cultural and historical development of Pakistan are great.

To broaden our view of the contributions of the historians in the University of Karachi, it may be pertinent to indicate briefly the scope of research in Islamic history. These include *The Rise of Mukhtar Thaqafi*, an analysis of the social, political and religious conditions under the Umayyads; *Kitab-ur-Rasul*, throwing light on the Prophet of Islam's Mithaq-u-Madina and *The History of the Usmanli Turks*.

Besides these areas, research scholars are engaged in the study of the evolution of social institutions in Arabia during the Muslim era, the development of *Suharwardiyah Silsilah* in West Pakistan, the development of the institution of the Caliphate under the Abbasids, and the influence of the Arabs on the administration and society of Sind under the Umayyads and the Abbasids.

(iii) *Application of knowledge.* As in other departments of the university, the Department of History is making its contribution in the sphere of teaching and research which are not only significant in an academic sense but also relevant to our cultural heritage and national ideology. However, even at the risk of repetition we would reiterate that its contributions in terms of advisory service are limited to making its researchers available to the government and an enlightened public through books and publications in professional journals. Beyond this, the contributions of all the departments

including History, Economics, Chemistry and Civil Engineering to national development are insignificant and trivial.

We have so far described the general contribution of the University of Karachi as well as those being made by four specific departments to national development and to its linguistic and political solidarity. It should be obvious that the University of Karachi within its limitations of resources and manpower, has made some contribution to national development although we expect much more than this from the universities in Pakistan. As a befitting conclusion to this section we quote below no less a person than the Vice-Chancellor of Karachi University. In a discussion paper to the CENTO conference of Rectors in February 1976 he wrote:

"In Pakistan we operate under difficult conditions. We have fewer resources and more people. University research has not contributed enough to the solution of our social, economic and cultural dilemmas. And Universities have not upheld high standards of intellectual quality, to the degree we should all expect. In short, there is lack of excellence and lack of relevance in our University, research." This is in agreement with Prof Salam's view quoted at the beginning of this report.

University culture

Traditional view of the academic community provides only a partial understanding of the organization of the modern university. In the modern context, three characteristics of a sense of community deserve special attention. There are shared sentiments and values, reciprocal roles including recognized division of labour and acceptance of a system of authority.

One way to test the existence of a sense of community is to find out the degree of acceptance of shared sentiments and values i.e. belief about purpose and goals of higher education, importance of academic freedom, loyalty to institution and agreement about day-to-day emphasis operating within the university. Looking at the University of Karachi from this point of view, the concept of an academic community is nothing more than a figure of speech or a stereotype. In the university today we have a dichotomy of interests between the faculty and administration, between the senior and junior faculty, between the temporary and permanent faculty, between students and teachers and between research and teaching viewed as mutually exclusive goals of a university.

The prevailing atmosphere of the university represents in a microcosm the larger Pakistan cultural panorama. Undoubtedly, the dominant norms and values of the Pakistan society are reflected in the prevailing university culture, if it can be said to have any culture at all. Many teachers in our group of interviewees doubted that the University of Karachi has developed a university culture.

Since, as in other developing countries, the university teachers and students are a specially privileged group in Pakistan, their beliefs and values are expected to be more specifically related to academic commitments. However, in fact, the higher norms of truth and social justice may only be the ideal and may not correspond with the expected behavioural manifestations of university men and women. Assuming, therefore, that the university community does have a culture, we may briefly analyse its dimensions and the pattern in the University of Karachi.

A close observer can discern at least three sub-cultures in the university whose interactions contribute to what may be identified as the university culture. One sub-culture is represented by the students' way of life on the campus. This undoubtedly partakes of the universal youth's activist culture, with its emphasis on student power, freedom without restraint, alienation from the established order and aggression against the "establishment." In the University of Karachi, the students' representation on the Senate and Syndicate has given them legitimate power within the university government.

The students lack the idealism and high academic commitment. There is only the recognition that the university can give them the requisite passport (degrees) for the future. The reason why they come and remain in the university for the required number of years is essentially economic, particularly for the male students. For the female students, the motivation is not so exclusively economic. Most of them are vague and confused about the aims of higher education. Their reasons for being in the university are probably more extra-academic; often it is a stop-gap arrangement till they get married. However, the female students are more hardworking in general because most of them are free from economic anxieties for the future, and have less social distractions in their life.

One reason for the students' low degree of commitment and devotion to academic attainments may be the fact that they do not see much relevance of higher education to their future prospects.

There has been an absence of manpower planning in education and most jobs are not related to the training imparted to the students.

The students-teacher relationship at the Karachi University is generally one of affection and respect for each other. The classroom behaviour of students is generally respectful. However, the general cultural feature of respect for the authority of teachers prevents students from being critical of what is being communicated. The semester system which is based on democratic academic interaction between the teacher and the taught has not yet taken root. A fundamental change of attitude both on the part of teachers and students is necessary and seems slow in coming.

The other dominant sub-culture may be identified as the university teachers' way of life. Here again there is a difference in the academic orientation of those roughly above 50 years of age and those below 40 years. A better division would be between those who have been trained recently during the last ten years and those who obtained their degrees about 25 years ago. The older university teacher emphasizes teaching and class-room performance as the primary role of a university teacher. Research to him is of secondary importance. The younger teacher, on the other hand, considers teaching to be based on research, which to him is the primary function of a university teacher. This fundamental difference in the research orientation between the teachers creates a psychological distance between these two age-groups.

The younger well-trained teachers feel frustrated and disillusioned because they do not get encouragement and recognition for their commitment to research. Their frustration is both psychological and material since research facilities are also often in the control of the senior colleague whose stereotype of a university teacher is quite inconsistent with the requirement of a development-oriented academic institution.

The frustration of the younger teachers is all the more intense because promotions in the university depend on seniority as well as research. Often even research is relegated to a secondary position and only seniority becomes the basis for advancement. In such a situation, the genuine research commitment of the young trained teacher is not rewarded. There is thus an inconsistency in the role-prescription of the university teacher because longer stay on the job is rewarded and research productivity is not only ignored but definitely discouraged.

The senior academics in general are conflict-ridden between their commitment to progress and change, on the one hand, and an almost rigid belief in the traditional ivory tower concept of a university whose sanctity should not be violated by mundane interference from non-academic quarters. This conflict is often manifested through rationalized defences of the various practices obtaining in the university. However, once a change is introduced, they generally accept it and conform to the general consensus. Manifest expression of conformity to legitimate authority is a norm in our universities.

The university teachers, both young and old, are strongly committed to academic freedom and are often aggressively vocal if it is likely to be tampered with. They are usually highly idealistic in their concept of academic freedom and the university autonomy. They are also very self-conscious about their social status in relation to that of the bureaucratic elites. The general university teachers' commitment to research and academic attainments is only limited to securing of higher degrees which gives them a sense of security and also a legitimate claim to higher positions of material gain and social prestige.

Academic integrity is valued as an ideal, and we all pay lip-service to its need in teachers and students. This is often emphasized and even verbalized in the advice given to graduates when degrees are conferred on them. The sentence read in every conferment ceremonial is: "I confer upon you the degree of . . . and charge you that by your conduct and character you prove yourself worthy of the same." It is our pious wish that the outgoing graduates will remember this advice all through their lives.

The third sub-culture may be identified as the non-teaching staff's way of life. There is very little rationality in their administrative behaviour and their "trained incapacity" to go beyond the word of the law is frustrating. They are typically service-oriented rather than client-oriented. Their procedures are cumbersome and, most often, irrational and dysfunctional. This does not let them be helpful to those whom they are expected to serve.

Since these three sub-cultures with different and varied motivations have, of necessity, to interact, we often have difficulties of communication, confusion and unintentional dilly-dallying. Moreover, there is little recognition of the need for interdependence and hence the three sub-groups may often be hostile to each other.

resulting in undesirable organizational factions and cliques.

There is very little participation of the university teachers in the affairs of the community except through the media of radio and television. Extension services are supposed to be the responsibility of professional institutions like the University of Agriculture, School of Social Work or Institutes of Education. Other universities, including the University of Karachi have no institutional programmes for extension or community services.

Summary

We have in this paper attempted to provide a national perspective on higher education in Pakistan. Within this frame work the physical setting, administrative structure and the dominant culture of the University of Karachi have been described.

Since universities are expected to be agents of change and development in a country, an attempt has also been made to present a description of the ecology and the prevailing cultural orientation of Pakistani society. This has been done with a view to highlight the problems and difficulties of the universities in performing their role as change agents in Pakistan.

The paper has attempted to bring out the following points:

(1) Development has been defined in the light of official government statements. Development strategy in Pakistan has aimed at socio-economic changes through a process of adjustment with the existing value system of the society. It should be achieved without external imposition of change strategies imported from other societies.

(2) University teaching and research need to be more development-oriented. In this connection, the specific contributions of four departments of the university have been described.

(3) Consultation between the university professors and development agencies have not been institutionalized.

(4) Prevailing attitudes towards each other between the university personnel and development agencies should change for a more positive and cooperative understanding, if universities have to play any significant role in national development.

(5) The prevailing culture of the universities is generally unhelpful and often inconsistent with the development needs of the society. A brief analysis of the university culture at Karachi has been presented to project the general academic atmosphere, and to provide

a perspective for the assessment of its role in the country's development efforts.

In fine, the present report has only described the prevailing academic and cultural atmosphere in the universities in general and in the University of Karachi in particular. No attempt has been made to present a theoretical perspective or analytical framework for the role of universities in national development, neither does the present report include any evaluative comment about the contributions universities in Pakistan.

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**The Philippines:
The University of the Philippines**

RAUL P. DE GUZMAN

1 Introduction

Since the attainment of political independence in 1946, the Republic of the Philippines has accepted the commitment to achieve development goals and objectives, i.e. to promote economic and social progress and the general improvement of the quality of life of the Filipino people. More specifically, the Philippine Government had set in its Four-Year Development Plan (1974-1977) the following development objectives: (1) the promotion of social development; (2) the expansion of employment opportunities; (3) the attainment of a more equitable distribution of income and wealth; (4) the acceleration of economic growth; (5) the promotion of regional development and industrialization; and (6) the maintenance of acceptable levels of price and balance of payments stability.

In earlier years, the main concern was to promote economic growth and to increase production and output to satisfy the country's requirement for capital equipment, foodstuff, consumer goods, housing, and social services. More recently, the emphasis is on social justice or equity goals that would lead to a more equitable distribution of national income and a more balanced development of various parts of the country. The new concern is to give more opportunities and benefits to the disadvantaged members of society and to reduce the disparities between the developed and underdeveloped regions. There is also an increased interest and effort to weld together the Christian majority and the Moslem and other cultural minority groups to achieve greater national unity.

These goals and objectives have guided the efforts and energies of the Philippine Government and served as the bases for the formulation and implementation of development programmes to eliminate or minimize problems of malnutrition, unemployment, poverty, and inequality in the country. The lopsided distribution of wealth led the political leaders of the country to aim at raising rural incomes through increased agricultural production, agrarian reform, promotion of small and medium-scale industries, rural

trained and competent scholars in various disciplines and professional fields who could provide the expertise and leadership necessary in promoting development.

This study focuses on the role of the University of the Philippines in the pursuit of national development goals. It attempts to assess the resources and capacity of the University, to evaluate its contributions, and to project its directions vis-a-vis national development. The role of the University will be discussed within the context of the physical, socio-economic, and political environment in the country.

electrification, cooperatives and other programmes focused on rural areas. Focus of the industrial development programme is on the promotion of employment opportunities through labour-intensive methods of production, expansion and diversification of manufactured exports and industrial linkages. Fuller employment and greater equity is being achieved not only through the generation of more employment opportunities, but also through the provision of essential social services—education, housing, social welfare, community development, security, health and nutrition.

In order to remedy the glaring disparities in progress among regions, and in order to ensure a more equitable distribution of the fruits of economic growth, the Philippine Government has pursued a wider and more intensive implementation of regional dispersal and development policies. For socio-economic, political, and security reasons, special attention is now directed to the Muslim Mindanao region. Besides the upliftment of the well-being of the people there, the regional thrust is expected to tap and utilize the rich natural resources of that area.

There are certain preconditions to development which set the "take-off point" for this moving process. The maintenance of peace and order is a prime requisite. Undoubtedly, investors, businessmen, tourists, and people in general shy away from areas without internal security and stability. Thus, the government has given much emphasis to the problem of maintaining peace and order, particularly in some parts of Luzon and Mindanao.

Then too, the total development effort should be preceded and sustained by infrastructure facilities consisting of a network of roads, portinstallations, railways, airports, telecommunications, electric and water resource facilities. These would link the various sectors and regions of the country and help accelerate the growth rate of these areas. The Philippine Government has therefore also given priority to infrastructure development.

In this difficult task of nation-building and of promoting economic and social progress, the Philippine Government has tapped the University of the Philippines (UP) as a significant "development enclave." It has been observed that the Philippines is one of the first countries, if not the first, in which its premier institution of higher learning has been conceived by its intellectual leadership from the beginning as being to serve the specific purpose of nation-building (Case *et al.*, 1970:1). The University has a reservoir of

compose 85 per cent of the population) there are other religious groups in the country including Protestants, Aglipayans, Iglesia ni Cristo, and Muslims. There is a clear notion of the separation of the state and the church so that religious tolerance is practiced.

The Philippine social structure has been stratified even during the pre-colonial period. Pre-Spanish concepts of status were sharpened by colonial experiences. The negative attitude of Spaniards toward manual labour and their maintenance of status through formalized education, especially for the legal profession, influenced the Filipino concepts of status and prestige. Law and medicine are considered high status professions with engineering and vocational training lagging behind.

The American libertarian, egalitarian precepts threatened the status symbol and tended to shift the basis of status from ascribed to functional foundations. Social relations were to be developed through an educational system instead of the traditional superstitious and ritualistic bases.

The postwar stratification of Filipino society may be likened to a triangular structure with a very small upper class (1 per cent) at the apex, followed down the structure by a slightly larger middle class (15 per cent), a large upper-lower class (25 per cent), and a very large lower-lower class (59 per cent).

The upper class can be described as large landowners, big businessmen, top government officials and highly successful professionals. The middle class is composed of most businessmen, some teachers, minor government officials and owners of medium sized farms. The upper-lower class is made up of most office workers, skilled labourers, owners of small farms, some teachers and some tenant farmers. The last group, the lower-lower class, is composed of unskilled labourers, household servants, landless farm labourers, and most tenant workers.

The income levels of these four groups are: ₱20,000 and over, ₱6,000—₱19,999, ₱3,000—₱5,999 and below ₱3,000 respectively. A reference point for these groupings is the average annual expenditures of the Philippine population in 1971 which was estimated to be ₱4,479.28. The last group is way below the amount of average expenditure while the first group has very much more. A poverty line of ₱3,867 per year for a family was estimated by Tan. This figure was the minimum cost budget for food and non-food items.

Another way of looking at the social grouping of the Philippines

2 The Physical, Socio-Economic and Political Environment

Physical setting

The Philippines is an archipelago in Southeast Asia composed of 7,100 islands. It has a land area of 297,410 square kilometers (115,600 square miles) which is concentrated in eleven principal islands. The country is divided into three major regions: the island of Luzon in the north where the capital, the City of Manila, is located; the Visayas group of islands in the middle; and the islands of Mindanao and the Sulu archipelago in the south. It has a maritime tropical climate with two distinct seasons in most parts—the dry and wet or rainy season.

The archipelagic nature of the country is further aggravated by its location within the typhoon and earthquake belts of Asia and the generally mountainous topography of most of the islands. The Philippines has been visited with distressing regularity by natural disasters—typhoons, floods, droughts, and earthquakes—which wreck havoc and destruction in lives and property and on government programmes and projects. The unfavourable physical setting combined with the unbalanced distribution of road networks and the inadequate transportation and communication facilities has made more difficult the delivery of services in many parts of the country.

Social characteristics

The Filipinos are a mixed race but are basically from the Malayan stock. There are many ethnic groups with different historical backgrounds and speaking different dialects. The Muslims from Mindanao and Sulu, constitute the largest and most influential cultural community. The largest foreign group of almost three quarters of a million Chinese exerts a significant role in the trade and commerce of the country.

While the Philippines is predominantly Catholic (estimated to

amplifying discontent among the masses. Thus, the pre-war unequal distribution of wealth was further aggravated after the war, thereby generating social upheavals, multiplying grave social problems and giving rise to squatters.

Meanwhile, since the Japanese occupation of the island, aggressive and imaginative people of the lower and middle levels have been going into commerce and industry and have emerged as a new elite or bourgeoisie.

Recent years also witnessed the growth of student power which has been instrumental or contributory to increased awareness of the need for social, political and economic reforms in our society.

Population characteristics

Population is an important factor in the socio-economic development of a country, particularly in developing countries like the Philippines, where the population growth rates are very high, with growth rates higher than 3 per cent after the Second World War.

The population of the Philippines for 1975 is estimated at 41,831,305 projected to increase to 49,136,853 (medium assumption) in 1980. The annual population growth is 2.67 per cent for the 1970-1975 period. It has a density of 139 persons per square kilometer as of 1970; the enumerated urban population composes 31.8 per cent of the total population.

If the country is considered in terms of the eleven administrative regions (as of December 1975) Region IV composed of Metropolitan Manila and adjoining provinces holds 23.68 per cent of the Philippine population. Region III, composed of the Central Luzon provinces, has 10.31 per cent of the population. Distribution of population in the Visayas and Mindanao is relatively evenly distributed from Regions VI at about 8 per cent to XI. The very high population percentage in Region IV can be explained by the highly concentrated population of Metropolitan Manila. In terms of the age distribution, the median age is estimated to be 17.8 years in 1975. With the high rates of growth, the Philippine population is getting younger.

Economic conditions

Philippine economy is basically agricultural with a high percentage of unemployment and underemployment. The underemployment is 13.6 per cent of employed persons at work while the unem-

is by dividing it into four groups: (1) the elites; (2) the middle class; (3) the industrial class; and (4) the peasantry. Each group has its own set of distinguishing characteristics. For instance, the elite can be described as: landowners, Western-educated to having common conservative beliefs. The middle class is composed of small businessmen, the bulk of intellectuals and professionals. The industrial class is composed of the industrial urban workers who composed a small percentage of the lower class. The peasants and the industrial workers compose 68.2 per cent of the population.

There are some major points to consider in describing the present Filipinos. The urban-rural distinction is important in understanding the different traits of the Filipinos. One can generalize that outside Metropolitan Manila, there are really no important urban centres to consider. This leads to the generalization that Filipinos are more rural than urban with 69.2 per cent rural compared to 31.8 per cent urban population.

Another duality to consider is the economy where a large rural sector maintains a traditional way of life and gradually accepts the technological novelties of the developed countries. The smaller urban sector is relatively prosperous with a modern monetized economy.

This geographical and economic duality has been influenced by Christianity from Spain and republican democracy from the United States. It is, however, the personally and locally-oriented systems which provide the infrastructure of institutions, society and culture. This explains the problems of graft and corruption, of tax collection and of implementation of economic development programmes.

According to Agoncillo and Guerrero, one significant change in the structure is the growth of the middle class. This is composed of professionals and small businessmen who are tangent to the masses and can therefore influence the latter and generate public opinion. The post-war upper class is composed largely of industrialists and big businessmen, with the big landowners or *hacienderos* relegated to the third place. One of the principal factors for this change is the awakening of peasants to their rights to live decently as free men and women.

On the other hand, the masses have increased considerably. Rapid population growth has outpaced increase in employment opportunities, considerably enlarging the mass of unemployed and

wide, while those of the lower house were elected by districts. The judicial functions were performed by the Supreme Court and its inferior courts.

In January 1973, a new Constitution was approved which provides for the establishment of a parliamentary system of government. The members of a unicameral legislature to be known as the National Assembly will be elected directly by the people. The National Assembly will then elect the Prime Minister and he will in turn select the other cabinet members. A separate Chief of State, the President, will be elected by the same National Assembly who shall serve as the ceremonial head of the government.

The shift to the new form of government has been deferred with the advent of martial law administration. In the words of the President, martial law was declared "to save the Republic and reform Philippine society." It was his response to the imminent danger of rebellion and to the recurring political, social, and economic problems of the nation. The structures and institutions in the country at the time seemed to be incapable of eradicating prevailing inequities and injustices and of promoting a just social order. They tended to preserve the status quo where the rewards to individual and group efforts to achieve economic and social progress were enjoyed by a few while the masses did not have enough of the bare necessities of life and continued to live in misery.

The imposition of martial law brought about a number of changes in the Philippine Government and in the basic political and civil rights of the people. The fundamental change in the political system was the establishment of an authoritarian form of government within the existing constitutional framework, now known as "constitutional authoritarianism." President Marcos, whose second term in office was to expire in December 1973, assumed full political, administrative, and military powers for an indefinite period. Elections were temporarily suspended; political parties were disbanded. The bicameral legislative body was abolished; the country is now ruled through presidential decrees, letters of instructions, and general orders.

There were also changes in the basic civil rights of the people. The freedom of expression was curtailed; restrictions were imposed on the press, on public discussions, and on the individual's right to dissent. Academic freedom in colleges and universities was restrained. The freedom of movement was restricted through the impos-

ployed as a percentage of the total labour force was 4.2 per cent. Post-war foreign trade is characterized by the predominance of imports over exports. For 1976, it was estimated to be \$ 200 million. Primary goods or raw materials comprise its exports while its imports consist of highly processed products and capital goods. The list of the top five exports follows: (1) centrifugal sugar; (2) coconut products; (3) desiccated coconut; (4) copper concentrates; and (5) wood-based products. It has a low per capita income relative to national aspirations, a concentration of income in the hands of a few, and an uneven geographic distribution of industrial establishments. The gross national product at market prices is estimated to have increased by 6.3 per cent for the 1975-76 period.

The immediate problems of the majority of the people are economic in nature. Popular demands are short-term, particularistic, and urgent such as lowering the prices of consumer goods, housing, more educational facilities, improved roads and transportation.

The government plays a major role in economic development. While the Philippines subscribes to a policy of free enterprise in the economic sector, the dearth of aggressive entrepreneurs has compelled the government to stimulate economic growth and utilize its resources to accelerate economic growth.

Popular demand for welfare services is strong and the government is by constitutional mandate committed to provide welfare services consistent with its democratic philosophy. The demands of different sectors have caused considerable stress from the resource base of the government so that priorities in fund allocation have to be established with the long-run benefit of the people as the primary consideration.

Government and politics

Before the proclamation of martial law on 21 September 1972, the Philippines had a representative system of government which was presidential in form and unitary in character. Under the Constitution of 1935, the powers and functions of government were formally lodged in three separate institutions. Executive powers were exercised by the President who was popularly elected for a four-year term and who performed varied executive-administrative-military functions. Sharing with the President the powers of government was a bicameral Congress composed of the Senate and the House of Representatives. The members of the Senate were elected nation-

3 The Philippine Educational System

As a social institution, education has a unique and leading role to play in our developmental environment. The basic strength of the Philippine educational system flows from the unanimous esteem in which schooling is held by the people, resulting in some of the highest enrolment ratios in the world, and supported by consistently high levels of public and private expenditures on education.

Philippine commitment to education is enormous and is expected to increase with our high rate of population growth and the increasing demands of society on the educational system. While the outlay for education accounts for only one-third of the total government budget, when expenditure for private education is included, the share may approximate 6.7 per cent of GNP, a ratio that places Philippine investment in education with those of developed economies.

Under the Philippine Constitution, education at all levels is the responsibility of the state. This constitutional commitment is met to a large extent on the elementary level. However, due to financial constraints, education at the pre-school level is primarily under the auspices of the private sector and 92 per cent of total higher education is in private institutions.

Organization of the Department of Education and Culture

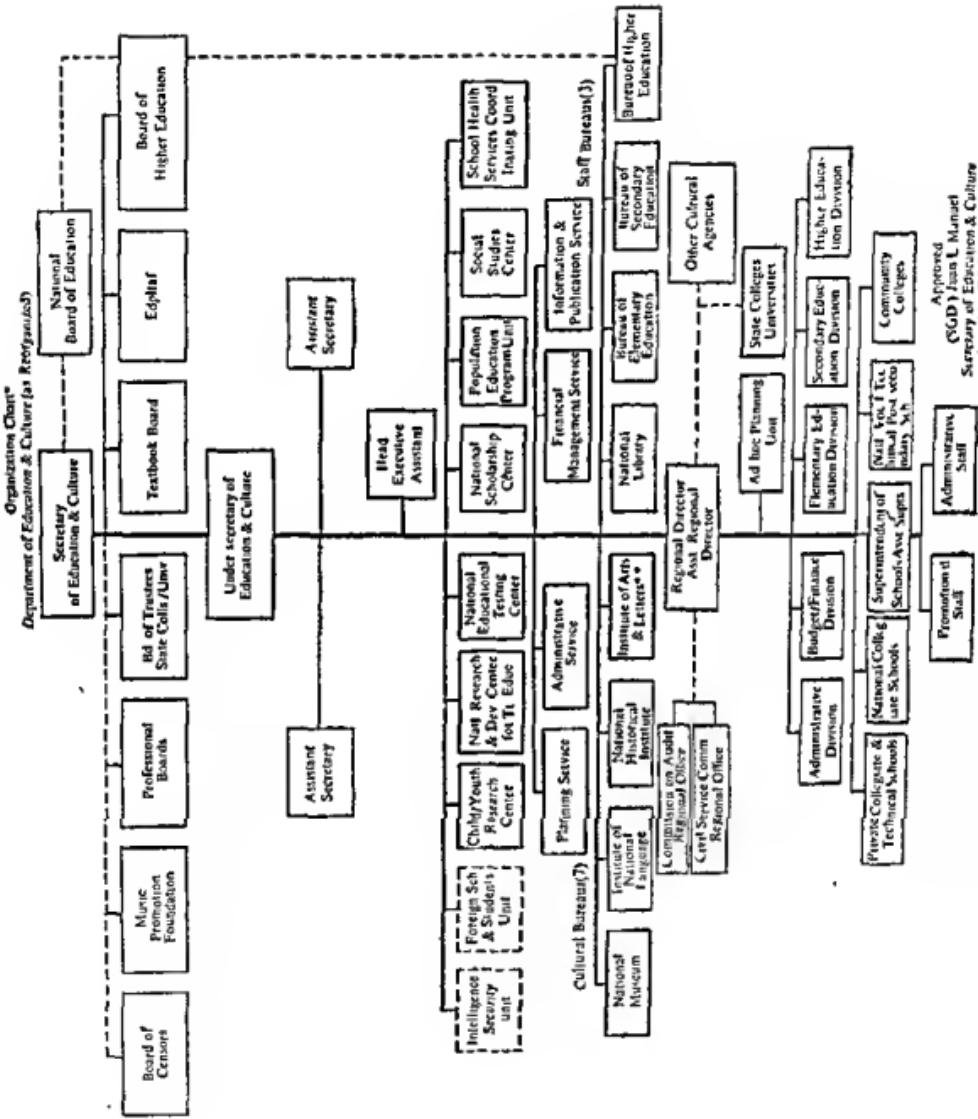
The following organizational set-up of the Department of Education and Culture (DEC) is in accordance with the 1972 Integrated Reorganization Plan of the Executive Branch of the national government.

The DEC is the agency responsible for developing and implementing programmes on education and culture in accordance with the policies and objectives formulated by the National Board of Education and in coordination with the Commission on National Integration on matters pertaining to national minorities. The functions of the department are exercised mainly through the Secretary assisted by an Under-secretary, three staff bureaus, the cultural agencies, and the regional offices.

sition of curfew hours and more severe travel limitations.

Under the martial law administration, there is a search for alternative political institutions to western democracy. Citizen participation in the process of governance is channeled not through elections but through the holding of referenda and plebiscites to get the views of the people on important policy issues. While local elections have been restricted, grassroots government has been strengthened through the grant of additional powers, responsibilities, and resources to barangays, the lowest level political unit in the local government system in the country. Local legislative bodies have also been restructured to provide a broader basis for citizen participation introducing sectoral representation in the local councils. A national legislative advisory body, the Batasang Bayan, has been convened.

Organization Chart (as Regorganized)



As shown in the organization chart (Chart 1), the Department proper is made up of the Office of the Secretary, the Planning Service, Financial and Management Service, Information and Publication Service, and the Administrative Service. It has direct line supervision over the bureaus, agencies, and regional offices. The National Board of Education is responsible for formulating general education objectives and policies and adopting long-range education plans.

The three staff bureaus, the Bureaus of Elementary Education, Secondary Education, and Higher Education, each headed by a director, are responsible for the implementation of policies pertaining to each level of the educational ladder—pre-elementary and elementary, secondary and post-secondary level, respectively. They exercise functional supervision over the regional and field offices.

The Bureau of Higher Education develops, formulates and evaluates programmes on higher education and scholarships. It also develops and establishes standards for all universities, colleges and other post secondary institutions of learning.

Several cultural agencies like the Institute of National Language, the National Library, the National Museum, National Historical Institute, and the National Institute of Arts and Letters are in the Department. They perform staff and line functions and directly implement their programmes in accordance with the Department policies and plans. Whatever field work they undertake is coordinated with the regional offices.

Attached to the DEC for programme and policy coordination are the Child and Youth Study Center and the Music Promotion Foundation of the Philippines.

The regional and provincial or city offices are organized and operated as miniature counterparts and operating arms of the DEC to facilitate action and minimize red tape in their respective jurisdictions. The regional offices, each headed by a regional director, supervise and evaluate the activities of the provincial and city offices.

History of education in the Philippines

Educational thinking in the Philippines has evolved from the titulado era of the Spanish regime, to vocational education under early American rule, to academic or titulado stage during the Commonwealth and independence eras, and back to vocational

on to Republic, did not radically change the old educational pattern which continued to be predominantly American in both concept and techniques. English remained the language of instruction except in the first grades of the primary level. The teaching of the lives of Filipino heroes was added to the curriculum.

With the grant of Philippine independence in 1946, the impact of social change in community life was considered. One of the significant changes in the educational field was the introduction in 1950 of the community schools concept which was primarily geared to the improvement of the social, economic and health conditions in the rural areas. Learning was integrated with living; cooperation between the school and the community was encouraged. Actual community problems and situations were the subjects of study in the schools which reciprocated in terms of instructions to the community in agriculture, health, sanitation, literacy and home industries. The Philippine Community School Movement was the object of considerable interest during the First United Nations Conference on Community Development for South and South East Asia which was held in Manila from 29 November to 10 December 1954.

No major changes in the education scene took place until 1969 when the demand and challenge for relevant and responsive education was strongly voiced.

With the advent of martial law in 1972, major reforms were introduced in Philippine society. In the educational system, values of citizenship were reemphasized and the importance of technical skills, scientific management and vocational efficiency were restressed.

The present system of higher education has gradually developed a Philippine model, the handwork of Filipinos, but with a lasting imprint from American and Western influences. Innovations that evolved in the process will be discussed at greater length in a subsequent portion of this paper.

Educational goals in the Philippines

Educational objectives in the Philippines are prescribed by the Philippine Government which has spelled out a matrix of goals and guideposts in order to give impetus and direction to educational thought, plan and action, delineate areas and scopes of responsibilities, and ensure meaningful and optimal performance of the education sector in the task of nation building.

alongside the scientific and technological, at present.

Education under the colonial regimes of the Spaniards, Americans, and Japanese was an instrument of colonial policy geared to the goals of the colonizers, not the Filipinos.

Education under Spain was predominantly Christian and European, characterized by a colonial and religious orientation and elitism. The curriculum stressed religion, reading, writing, and arithmetic. The schools had to preach—teach the gospel and provide elementary, secondary and vocational education. Missionaries were included in the teaching staff.

The beginnings of higher education in the Philippines date back to the Spanish period. The first schools were the College of San Ignacio founded in 1589 by the Jesuits and the College of Santo Tomas by the Dominicans in 1611. The latter is now a university and is the oldest educational institution in the country today. Among the girls' colleges that were established later, only the College of Santa Isabel founded in 1632 and the Assumption College in 1892, have remained. Students were taught Latin, theology, Spanish, rhetoric, philosophy, science and the classics.

During the almost four centuries of Spanish rule, the professional class was very small. Entry to the professions was limited to the small group of Spanish residents and a few wealthy Filipinos. Courses in higher education were offered only in the University of Santo Tomas which was the source of manpower training for priests, doctors, pharmacists, surveyors, commerce graduates and teachers. Education became an elitist symbol and those who earned diplomas landed white collar jobs. All formal educational institutions at all levels were organized and managed by religious orders and congregations; schools were primarily utilized to spread the Christian religion.

Prior to 1901, education in the Philippines at all levels was a private school monopoly. The Education Act of 1901 organized a general system of public schools and authorized the establishment of private schools. It also established the Philippine Normal School (now College) to propagate and promote teacher training. In 1908, the UP was established as a state institution of higher learning to train more professionals and develop leaders for the country. Most of the biggest and better known private schools and some state-supported colleges were established during the American era.

The change of status from colony to Commonwealth and later

FIGURE 1

INPUTS

- * National Aspirations and Development Goals
- * Cultural Values and Traditions
- * Existing Knowledge
- * Financial Inputs
- * Physical Resources

- * Qualified Manpower Stock
- ** Students
- ** Management
- ** Teachers

OUTPUTS

- Good Citizens
Manpower for:
 - : Agriculture, Forestry
 - : Mining
 - : Manufacturing
 - : Transportation, Storage and Communication
 - : Electricity, Gas, Water and Sanitary Services
 - : Commerce
- : Government, Community Business and Recreational Services
- : Domestic Services
 - : Production Services not classified elsewhere



- * Inputs from society
- ** Inputs by the Education system

An adaptation from Philip H. Combs, *The World Education Crisis: A System Analysis* (Oxford Press, 1969) p. 11-12

By constitutional mandate, all educational institutions shall aim to inculcate love of country, teach the duties of citizenship, and develop moral character, personal discipline, and scientific, technological and vocational efficiency.

As prescribed in the Educational Development Decree of 1972, otherwise known as Presidential Decree No. 6-A, the State policy is aimed not at economic development only, but also the strengthening of national consciousness and the promotion of desirable cultural values. It implies that the educational policy should be geared to and aligned with national development goals. More specifically the educational system should aim to: (1) provide a broad general education to assist the individual attain his potential as a human being, enhance maximum participation in the functions of society, and develop productive and versatile citizens; (2) train the nation's manpower in the middle-level skill required for national development; (3) develop the high-level professions that will provide leadership for the nation, advance knowledge through research, and apply new knowledge for improving the quality of human life; and (4) respond effectively to changing needs and conditions.

Towards the above targets, the student is provided with the proper attitudes, the needed knowledge and appropriate skills.

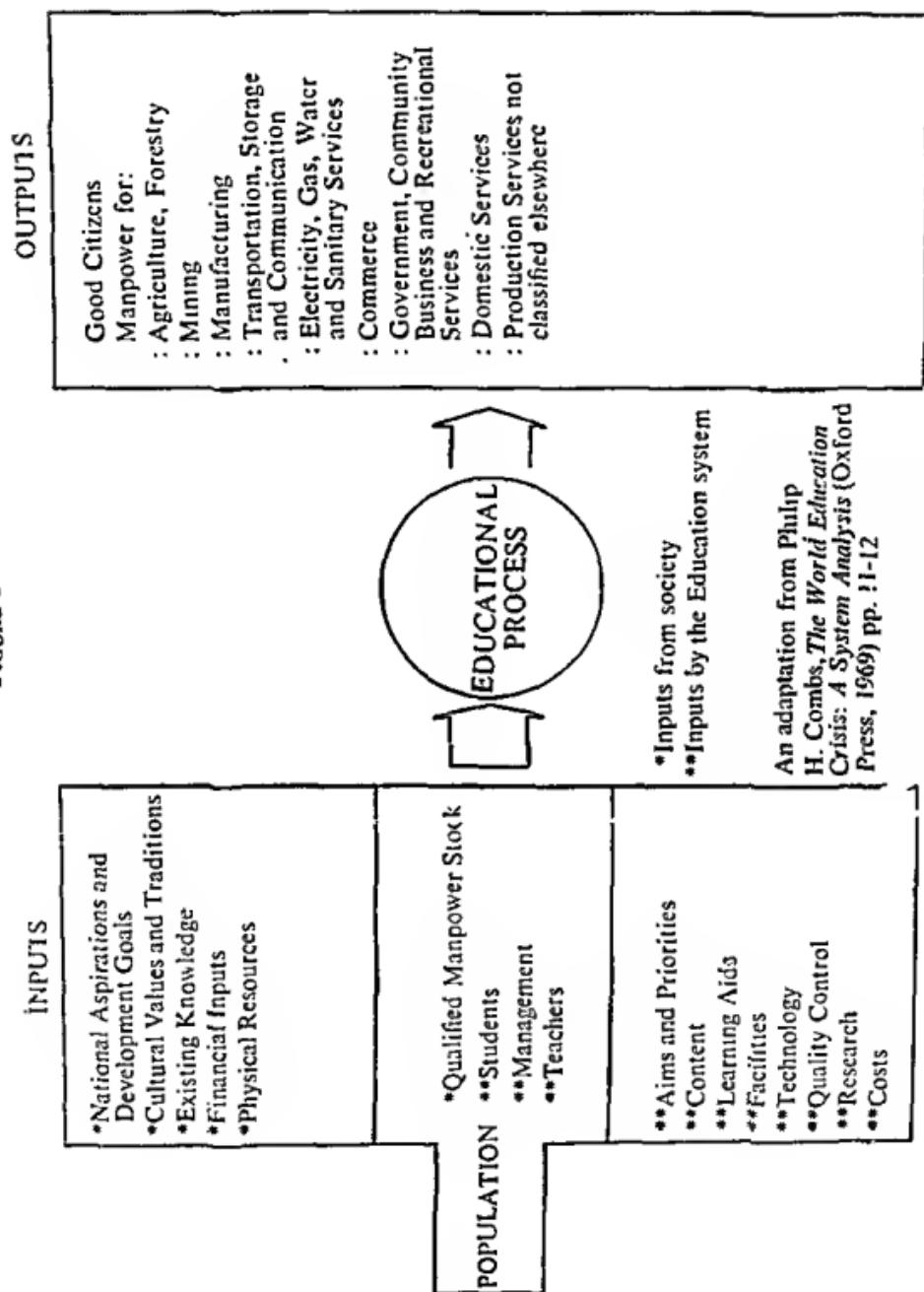
The educational process

In the Philippines, education is viewed as a development conversion process with the student population as the basic material to be converted by the educational process into outputs absorbable into the economic and social system of the country. By absorption is meant that the end product is capable of finding useful and gainful employment in the economic and social system or with various sectors employing manpower.

The basic input undergoes a series of conversions in the educational process, either through the formal or non-formal strategy. Formal education refers to all the programmes and projects of the Department of Education and Culture; non-formal to those programmes involving improvement of manpower skills outside the jurisdiction of the DEC. As shown in Figure 1, qualitative and quantitative inputs from both Philippine society and the educational system are utilized in the process.

The formal strategy in the Philippine educational ladder consists of three general levels as shown in Figure 2: six to seven years of

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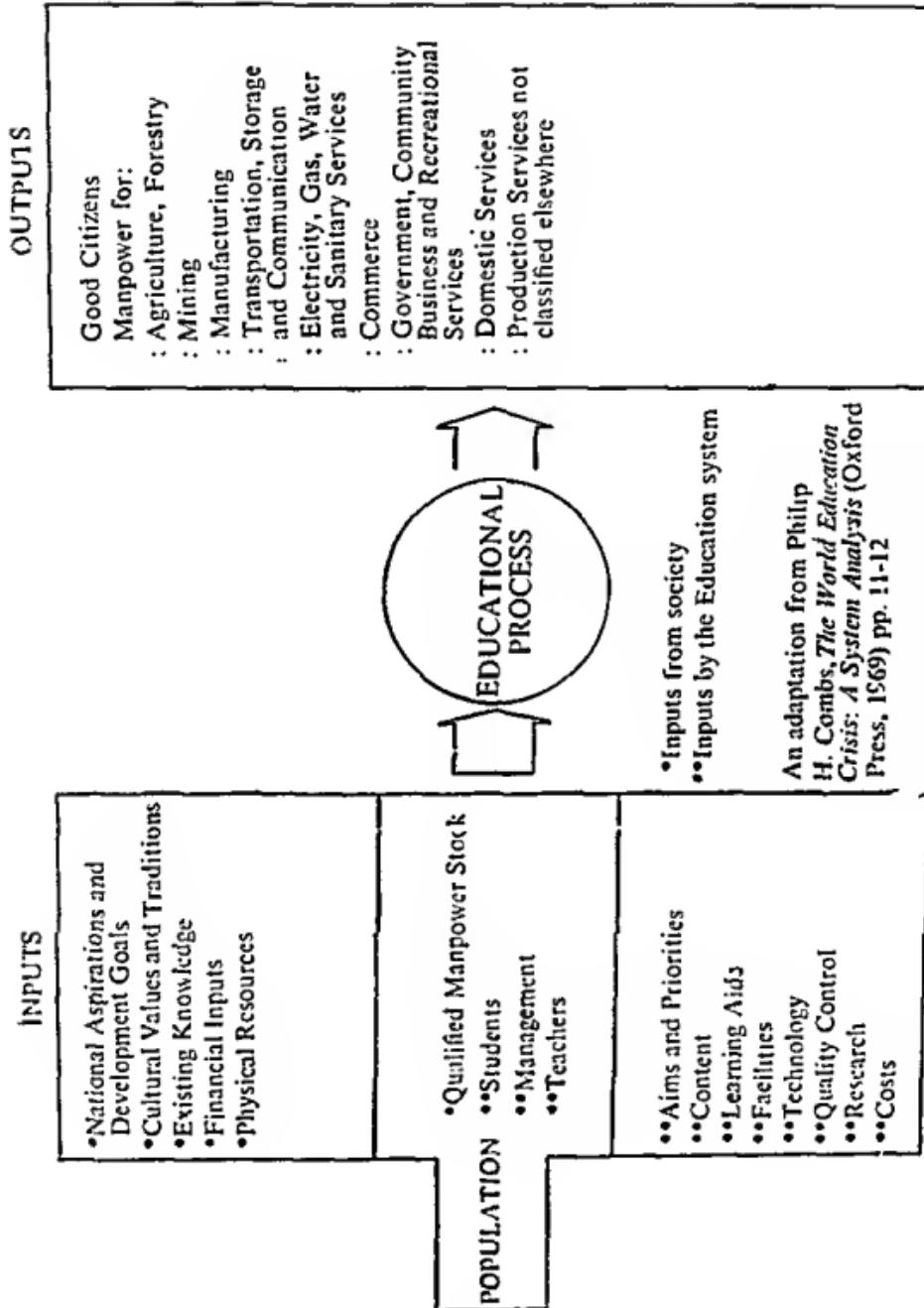
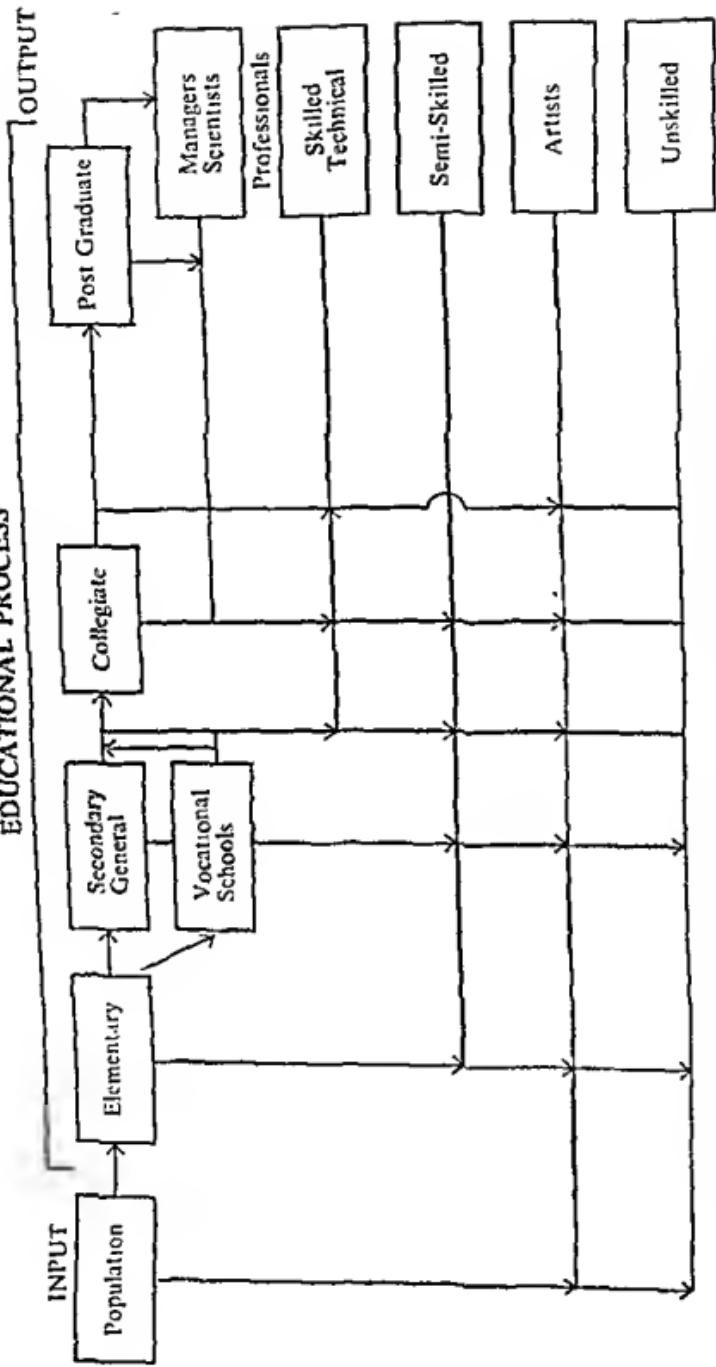


FIGURE 2
EDUCATIONAL PROCESS



LEGEND:

- Population without any education
- Drop-outs from the elementary
- Drop-outs from the secondary level
- Graduates from the secondary level

- Drop-outs from the collegiate level
- Graduates from the collegiate level
- Drop-outs from the post-graduate level
- Graduates from the post-graduate level

elementary schooling, four years of secondary or high school education, and four or more years of higher or college instruction. Beyond the secondary level, there are programmes of one, two or three-year durations for training technicians or technologists.

A child of seven years goes through the first stage of four years of primary and two to three years of intermediate schooling. The first level is basic, compulsory education intended to provide the individual with general education—literacy, numeracy and communications skills. Some courses in practical arts like woodworking, basket weaving, and gardening are also included in the curriculum.

The second stage brings the child to the secondary level of either general secondary or vocational schooling for four years. Both academic and vocational subjects are taught. The revised secondary curriculum increased emphasis on vocational-technical subjects and placed them on par with academic courses with class hours equally divided between the two types of courses. Actual trades and other vocational pursuits like agriculture and fisheries as well as middle-level skills for national development are offered. This level seeks to discover the abilities and aptitudes of students and offers courses according to their talents, their ages, and the needs of the community. Counselling and guidance are therefore prescribed.

At the age of 16 or 17 and after passing the National College Entrance Examination (NCEE), the student enters college or the tertiary stage where he is provided with instruction in the professions and fields of specialization such as natural science, medical science, engineering, business, education, law, etc. The student concentrates in his field of interest and prepares himself to join the ranks of the employed. Ideally the end product is an individual who can fulfil his physical, intellectual, emotional and social needs, participate in the basic functions of society, and ultimately contribute to the economic and social system of the country. Thus, the tertiary level generates the high-level qualified manpower most immediately relevant to national development. It produces most of our key officials and the leaders of the country and provides many opportunities for advance research to improve the quality of human life. Beyond this stage, the individual has the option either to pursue more advanced graduate studies or be absorbed into the economic market.

The vocational technical education programme of post-secondary technical institutes offers instruction on the proper and skilful use

of tools and machines. It seeks to prepare the individual to enter upon a trade or occupation so he can earn his livelihood and provide for those dependent upon him. Among the areas included are agricultural education, industrial and trade-technical education, fishery education, and home industries training programmes. This type of training seeks to meet the need for middle-level technicians who can operate and man our industries.

As shown in Figure 2, in the educational process, a certain percentage of the basic input of students drops out of the system at each level of the system while others will complete the entire process and end up in higher education.

Growth in higher education

Progress in higher education has been phenomenal. Some indicators of this growth are the increase in the number of educational institutions, enrolments and graduates.

One area of growth is the increase in the number of educational institutions. State colleges and universities have more than doubled over the past ten years, from 15 in 1966 to 40 as of 1976. Likewise, as shown in Table 1, there was a marked increase in the number of private collegiate schools, from 105 in 1946-47 to 351 in 1955-56, 440 in 1965-66 and 554 in 1971-72.

TABLE 1. *Number of Private Collegiate Schools SY 1945-46 to 1971-72*

School Year	No.	School Year	No.
1945-46	105	1959-60	366
1947-48	213	1961-62	355
1949-50	363	1963-64	434
1951-52	411	1965-66	440
1953-54	389	1967-68	566
1955-56	351	1969-70	584
1957-58	341	1971-72	554

The colleges and universities are not evenly distributed among the 12 regions of the country. As shown in the accompanying list, there is an undue concentration of the 40 state colleges and universities on the island of Luzon where 29 of them are located. Of this latter number, 11 are in Region IV (Southern Luzon) which includes the Metropolitan Manila area. Only 6 are found in the Visayas and

5 in the Mindanao area. A similar trend of concentration is observable in private colleges and universities. In a listing of 365 of these private institutions, 210 are in Luzon with 107 in Region IV (Southern Luzon), 64 in the Visayas and 91 in Mindanao.

This uneven distribution of higher education institutions had led to the increased influx of student population in the areas of concentration with the consequent centralization of educational and other services and benefits in these places and the underdevelopment of some rural areas.

However, although there is still too much concentration of higher education in the urban centres, most provinces depend upon local private colleges for the advanced training of their youth. This service of private education has important social nuances. Besides facilitating social mobility, it helps retain the rural youth in the provinces and reduce the serious overcrowding in cities.

Enrolment in private higher education increased steadily by the year from 345,030 in SY 1963-64 to 656,266 in SY 1972-73, with an average rate of 7.63 per cent increase during the ten-year period (see Table 2). The most significant rates of increase were noted in 1965-66 (20.65 per cent) and in 1964-65 (12.68 per cent). It is to be noted that the rates of increase were lowest during the two years (1969-71) immediately preceding the declaration of martial law in the country.

TABLE 2. *Rate of Growth of Total Collegiate Enrolment in Private Schools (School Year 1963-73)*

School Year ¹	Total Enrolment ¹	Percentage Rate of Increase (Decrease)
1963-64	345,030	
1964-65	388,780	12.68
1965-66	469,038	20.65
1966-67	495,836	5.71
1967-68	539,210	9.43
1968-69	565,035	4.79
1969-70	574,020	1.59
1970-71	584,171	1.77
1971-72	601,835	3.02
1972-73*	656,266	9.04

*Estimates only.

NEDA Statistical Yearbook of the Philippines, 1976, p. 494.

On the other hand as shown in Table 3 total enrolment in the state colleges and universities almost doubled, from 63,129 in 1963-64 to 106,124 in 1972-73. Growth patterns have been erratic and did not stabilize until 1969-70. The growth rate dipped again in 1971-72, immediately before and after the declaration of martial law; it went up by 20.30 per cent the first year of martial law administration.

TABLE 3. *Rate of Growth of Total Enrolment of State School Colleges and Universities¹*
(Year 1963-73)

School Year	Total Enrolment	Percentage Rate of Increase (Decrease)
1963-64	63,129	
1964-65	73,929	17.11
1965-66	68,397	7.48
1966-67	69,994	2.33
1967-68	70,016	0.83
1968-69	69,087	(1.33)
1969-70	74,780	8.24
1970-71	84,719	13.29
1971-72	88,215	4.13
1972-73	106,124	20.30

¹Based on enrolment data from 34 state colleges and universities.

State colleges and universities are generally small in terms of enrolment. However, in recognition of its failure to assume its fair share of the burden of Philippine higher education, the University of the Philippines System (UPS) is taking steps to make its programmes more accessible to a broader segment of the college age group.

As reflected in Table 4, the number of college graduates grew erratically from 52,937 in SY 1963-64 to 84,518 in SY 1972-73, showing a 59.66 per cent for the ten-year period. Rates of increase were significant in SY 1964-65 (27.06 per cent), 1965-66 (22.77 per cent) and 1969-70 (15.89 per cent). On the other hand, a significant rate decrease of (14.08 per cent) was noted in SY 1970-71, the heights of student activism and demonstrations. Other rate decreases were noted in 1967-68 (1.88 per cent); 1968-69 (0.7 per cent) and 1971-72 (1.64 per cent).

TABLE 4. Rate of Growth of College Graduates
(School Year 1963-73)

School Year	Private Schools			State Colleges and Universities			Grand Total	Percentage Increase	Percentage Rate of Increase
	Total	Percentage Increase	Rate of Graduates ¹	Total	Percentage Rate of Graduates*	Grand Total			
		(Decrease)			(Decrease)	Graduates	(Decrease)		
1963-64	51,945		27.05	992			52,937		
1964-65	65,996			1,268	27.82		67,264		27.06
1965-66	81,327		23.23	1,250	(1.42)		82,577		22.77
1966-67	86,075		5.84	1,417	13.36		87,492		5.95
1967-68	84,033		(2.37)	1,813	27.95		85,846		(1.88)
1968-69	83,127		(1.08)	2,140	18.04		85,267		(.07)
1969-70	96,642		16.26	2,171	1.45		98,813		15.89
1970-71	82,469		(14.67)	2,433	12.07		84,902		(14.08)
1971-72	81,463		(1.22)	2,048	(15.82)		83,511		(1.64)
1972-73*	82,964		1.84	1,554	(24.12)		84,518		1.21

*Estimate only.

¹NEDA Statistical Yearbook of the Philippines, 1976.

²Presidential Study Committee on State Higher Education, Towards the Integration of Higher Education in the Philippines, 1976.

4 The University of the Philippines

The University of the Philippines, the premier institution of learning in the country, was established through a special charter (Act No. 1870) by the Philippine Legislature on 18 June 1908. As expressed by its first President, Dr Murray Bartlett, UP would "cover the whole field of intellectual activity, attain culture and usefulness and where the good atmosphere is to prevail." Through its years of existence, UP has maintained consistently its high standards of quality putting itself at the apex of the Philippine education system.

Statement of principles

The University of the Philippines Code of 1967 (as revised) states:

The UP is a citadel of truth. It is a university of the people, and therefore it has no partisan political affiliation. It is a secular university, and therefore it has no religious sectarian adherence. Its mission is to constantly search for knowledge. Scholarship is its primordial concern, research its indispensable arm and unfailing source of strength. It believes in and values above all things else human freedom without which there can be no creative ingenuity that can make of knowledge a blessing to society.

The basic commitments of the University are: to advance human knowledge through scientific research and creative study; to provide higher education and professional training; and to conserve, disseminate and develop Filipino scholarship in the spirit of free inquiry.

The University shall at all times assert and safeguard academic freedom in accordance with the Constitution of the Philippines. This vigilance shall extend equally to the four essential freedoms of a university—to determine for itself on academic grounds who may teach, what may be taught, how it may be taught and who may be taught.

Every member of the faculty shall enjoy academic freedom, which is the right of the teacher to teach the subject of his specialization according to his best lights; to hold, in other subjects, such ideas as he believes sincerely to be right; and to express his opinions on public questions in a manner that shall not interfere with his duties as a member of the faculty. No limitation shall be imposed on the teacher's freedom in the exposition of his own subject in the classroom or in addresses and publications, nor shall any restraint be placed upon the teacher in the choice of subjects for research and investigation.

The University in its essence is a community of scholars and members of the faculty, regardless of rank, are not superiors and subordinates to one another. Deans and directors and other academic officers are mere colleagues who, for the time being, have been assigned administrative responsibilities.

As a state institution, the University affirms its adherence to the Constitutional guarantee of freedom of religion. No property or funds of the University shall be used, directly or indirectly, for the benefit or advantage of any sect, church or religious denomination or of any priest, minister, or other person of religious calling, subject to constitutionality recognized exceptions. In the appointment of members of the faculty, no religious test shall be applied, nor shall their religious opinions or affiliations be a matter of inquiry. No member of the faculty shall inculcate sectarian tenets in the course of his teaching, nor shall he influence or attempt to influence, directly or indirectly, students or attendants at the University for or against any particular church or religious sect.

The University is without commitment to any political party or creed. No person in the service of the University shall engage directly or indirectly in partisan political activities, or take part in any election, except to vote and to express his views on current political problems or issues including mentioning the names of the candidates whom he supports, which are allowed by law.

The University was originally situated on Padre Faura Street in the Ermita area where it occupied 10 hectares of land. The first colleges and schools to be established were those of Medicine and Surgery on 1 December 1905, Agriculture in 1909, Fine Arts in

country and to create a UP in the Visayas to be established in the existing UP Iloilo. The University hopes to develop the other external units for ultimate conversion into autonomous universities.

Administration

The formal pattern of authority relationships in the University of the Philippines is a hierarchical network consisting of a president, two chancellors, three vice-presidents, deans and directors, college secretaries, department chairmen, programme heads, and so on. Combined with this set-up are the functional specialists for student affairs, legal services, alumni, public relations, and others. Other decision structures include university and college committees composed of members drawn from various university constituencies, e.g., faculty, administrative personnel, and the studentry, cutting across hierarchical lines.

The following are the officers of administration of the University.

Board of Regents—as a corporate body, UP is vested with the rights and powers adherent to such an organization. The Board of Regents and the President, as authorized by the former, have the exclusive right to exercise these powers for the University.

The Board, in addition to its corporate powers, has the power to appoint, renew, promote or make permanent upon the recommendation of the President, the following:

(a) The Vice-Presidents and the Secretary of the University System, and other officers of administration therein;

(b) the Chancellors and Vice-Chancellors of the autonomous Universities, and other officers of administration therein;

(c) the deans, directors, or heads of colleges, schools, institutes, and other principal units of the University, academic, or non-academic, which are not supervised by or attached to such units (and other institutions, and special assistants);

(d) faculty members with the rank of [assistant] associate professor or higher, professorial lecturers, visiting or exchange faculty; and [officers of the autonomous Universities, the external units, and other institutions with or above the rank of administrative officer, research associate, or specialist I, or the equivalent thereof] other officers and employees whose starting

salaries are at least equal to that of associate professor, insofar as the following personnel actions are involved.

The President—being the chief executive of the University, he has overall authority and responsibility for the various activities by the University. He has the power to appoint officials and employees in his office, in University-wide units, and in other offices not part of any autonomous University other than those whose appointments fall under the powers of the Board of Regents. The President is assisted by the Executive Vice-President, Vice-President for Administration, Vice-President for Academic Affairs and the Secretary of the University.

Chancellor is the executive officers of the autonomous University and as such, among others, has the power to appoint officers, and all other employees in the autonomous University and to perform such other functions as the Board of Regent or the President may delegate to him towards the expeditious administration of the University.

Secretary of the University is appointed by the Board upon the recommendation of the President. He helps the President in preparing the agenda of the Board of Regents and concurrently serves as the Board's secretary.

University Registrar handles admission of students to this University and such other matters like grades, transfers, clearances, and other matters pertinent to the enrolment of the student in UP.

Dean of Student Affairs coordinates the policies and activities with units under it in order to promote student welfare and interests. These units are: Division of Scholarships and Financial Assistance Service, Division of International Students' Programme, Student Loan Board, Division of Auxiliary Services.

University Council is a University organization composed of faculty members with the rank of assistant professor and higher with the President or chancellor as chairman. Subject to the approval of the Board of Regents upon the recommendation of the President, the Council has the power to:

- (a) Prescribe the courses of study, curricula and rules of discipline of students in the autonomous University;
- (b) fix the requirements for admission to any college or unit

of the autonomous University and for graduation and the awarding of degrees; and

(c) recommend recipients of degrees or diplomas.

The University Council also, through its appropriate committees, exercise disciplinary powers over students pursuant to the rules of discipline prescribed by the Board of Regents.

It has an executive committee with the President as Chairman and the officers of administration, deans and directors of academic units as members. The University Council discharges its duties through its committees.

Reorganization

The University underwent a major reorganization effective 1 January 1973 when the Board of Regents unanimously approved a resolution changing it into the UPS and creating the UPLB as the first autonomous member of the System. In the opening paragraphs of the resolution, the Board gave the following justification for its action:

The realization of the national programme of economic development and social progress requires the fullest cooperation of the educational and research institutions of the Republic.

The University of the Philippines, as the nation's leading institution devoted to higher education, research, and community service, bears a special responsibility in that regard.

The National Board of Education has approved a recommendation of the Presidential Commission to Survey Philippine Education designating the University of the Philippines as the national university of the Philippines.

It has become necessary to reorganize the University of the Philippines so that, through the concerted application of science, technology, and the behavioural sciences to the problems of society, the University may serve as a more effective instrument of national development, while maintaining its commitment to arts, letters, and the humanities, as well as to the pursuit of truth and the highest standards of academic excellence.

Such reorganization is best effected by preserving the institutional unity and academic integrity of the University of the Philippines while allowing for decentralization of authority and

autonomy of the component units.

Under the Systems, autonomous units were to be established in the University to be headed by a Chancellor. The first of such units was the University of the Philippines at Los Banos (UPLB), the second being the Philippine Centre for Advanced Studies (PCAS) which is located within the UP main campus. Autonomous units have the freedom to administer their own affairs in accordance with existing policies and rules of the Board of Regents.

University student composition

From an enrolment of 50 students in 1909, total collegiate enrolment in the University has grown to 39,279 in 1975-76 over a period of 67 years. This rapid growth has been caused largely by the need to keep pace with the tremendous educational requirements of a developing economy like the Philippines. If taken in the context of total collegiate enrolment in the country, however, it would be seen that the University's share in the task of educating the Filipino youth has remained at a relatively low level. To make matters worse, studies have shown that UP has been catering mostly to students coming from the urban areas with and from higher income families. This phenomenon has been traced back to the fact that students from the urban areas are usually better prepared for college work and have an easier time passing the University admission tests while those from the rural areas, except for a very few, turn out to be less prepared to tackle said entrance examinations. This is probably due to the lack of facilities both in the rural schools and in the homes of the students—and this would include exposure to the media, library facilities and more modern equipment.

To remedy the situation, the University in formulating its development plans has decided to adopt some modifications in its policies concerning students. These policies would cover the admission examination; the learning assistance programme; the grading system; the system of prerequisite; the scholarship programme and policies on tuition fees.

As a start, entrance scholarship in the University has been made purely honorific—by abolishing the usual exemption from paying tuition fees—but, giving students equal privileges upon entrance to the University.

Curriculum development

In its 67 years of existence, the University has maintained a standard of academic excellence. This dedication to the pursuit of truth and knowledge was affirmed anew by the President of the country when he said, "the intellectual integrity of the U.P. is paramount. . .whatever conflicts we may have, the intellectual integrity of the University must be maintained, this is the challenge of to all leadership, outside and inside the University. . .Emboldened by this reassurance, the incoming President of the University immediately launched a series of development programmes to change the thrust of the University's activities—where before it strove to be the apex of the Philippine educational system, now it will attempt to be at the centre of that system. In line with this objective, new centres, institutes or programmes were instituted geared mostly towards assisting the national government attain its promise of providing a better life for the greater majority of Filipinos. Towards this end, the following were some of the units established or expanded:

(a) An expanded Institute of Agricultural Development Administration—aimed to provide the management skills that will operationalize the agricultural development concepts that have evolved through the years.

(b) Institute of Human Ecology—to ensure that proper and continuous attention is paid to the conservation and protection of the environment.

(c) Institute of Agricultural Engineering and Technology—to provide the engineering and technical imperatives towards an integrated approach to rural development which along with agricultural development is the major thrust of the UPLB as an autonomous unit.

(d) Philippine Medical Centre—will be established to provide a system that will link with present and projected specially hospitals like the Philippine Heart Center, the National Lung Center, the Cancer Center, and other specialized service hospitals to form a network thru which medical training, health research and patient service can be performed as never before possible.

(e) National Teacher Training Center for the Health Sciences—is involved with teacher training, research and service along the topic areas of curriculum and teaching methods and

evaluation of health education.

(f) The Kindergarten to 10th Grade Program (K-10)—this is a new approach to the pre-collegiate education wherein a student can stop schooling before he finishes Grade 10 still be adequately prepared to find a job to enable him to contribute to society.

Human Resources

Academic Personnel

Since teaching is still the primary function of any institution, the University throughout the years, has made sure its faculty represents the cream of the teaching profession in country. Recruitment to the faculty has been strictly based academic performance, potential, teaching ability, research productivity and community service. It has been suggested, in fact, admission to the faculty be limited to those with magistral doctoral degrees only. Studies are being done towards this end.

To provide for the continuous growth and development of faculty, the University has allowed them to accept fellowships, scholarships, special assignments and to participate in foreign local exchange programmes. Hence, the number of Ph.D.'s in University has increased by 61.6 per cent from 1968-73, degree holders by 23.7 per cent. As of 1976, the faculty composed of:

Ph.D.'s	—	248
MA or MS	—	731
AB or BS	—	543
LLB., MD, DDM, etc.	—	334

The faculty has also been actively engaged in research with College of Agriculture, leading in total number of researches taken and on going. In addition to funds appropriated by University for these projects, foreign agencies such as the United States Agency for International Development (AID), the Ford Foundation and the Rockefeller Foundation, have also been giving assistance to the UP in the form of research grants. A big boost the research output of the UP is the National Science Development Board assistance totalling P5 million to finance 96 research for national development.

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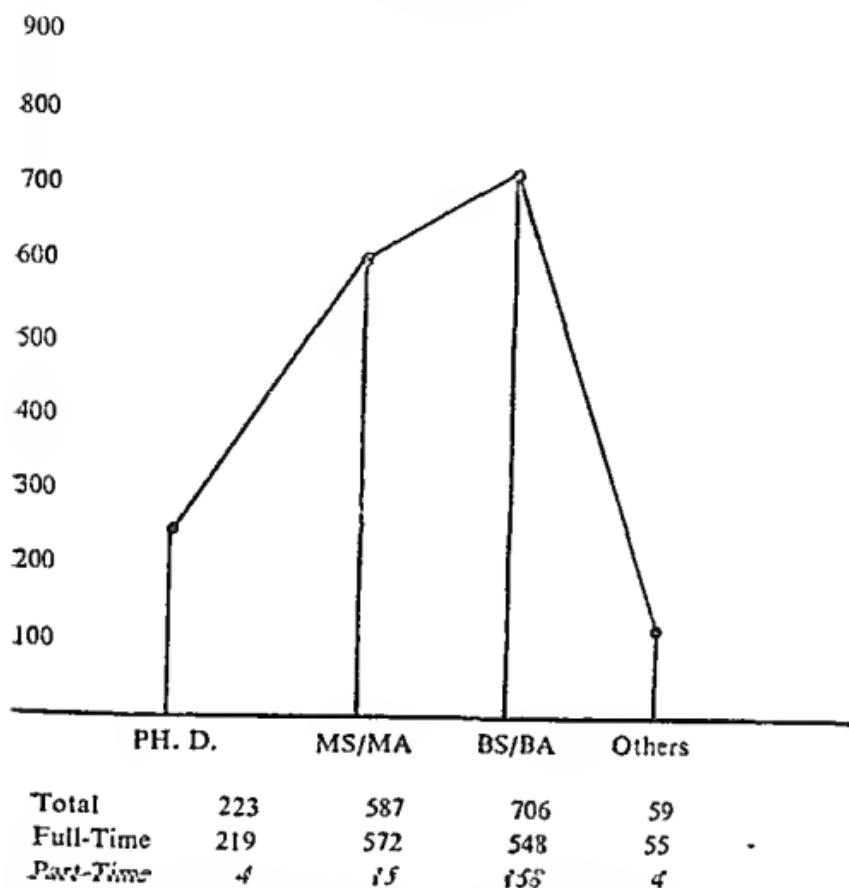
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FIGURE 3
FACULTY DEGREE PROFILE
AY 1974-1975



Another equally important function of the University—community service is another activity undertaken by the faculty. It is said that the UP is the biggest consulting firm of the Philippine Government and as such it provides not only the government but also private entities with management studies, personnel audit, feasibility studies, which guide decision-makers in arriving at sound policies. The faculty has also been much in demand in conducting training programmes or participating as resource persons, speakers, paper writers or experts. The Presidential Reorganization Commission report which provided the President of the country with basis on the current reorganization taking place in almost all branches of the government was largely a product of UP faculty members who

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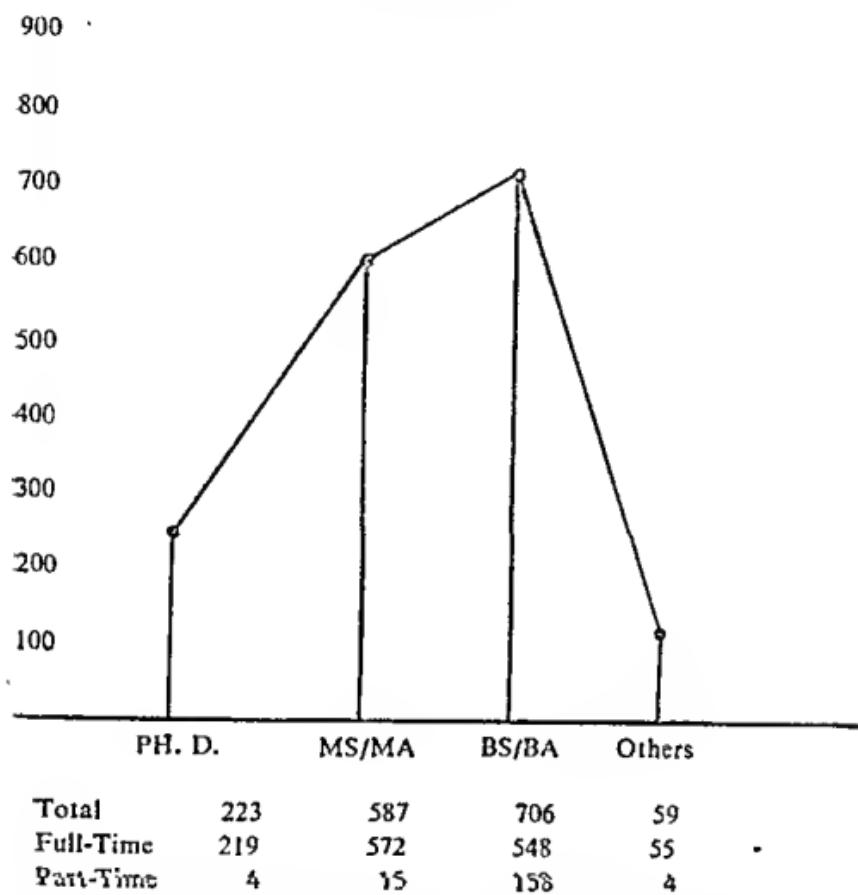
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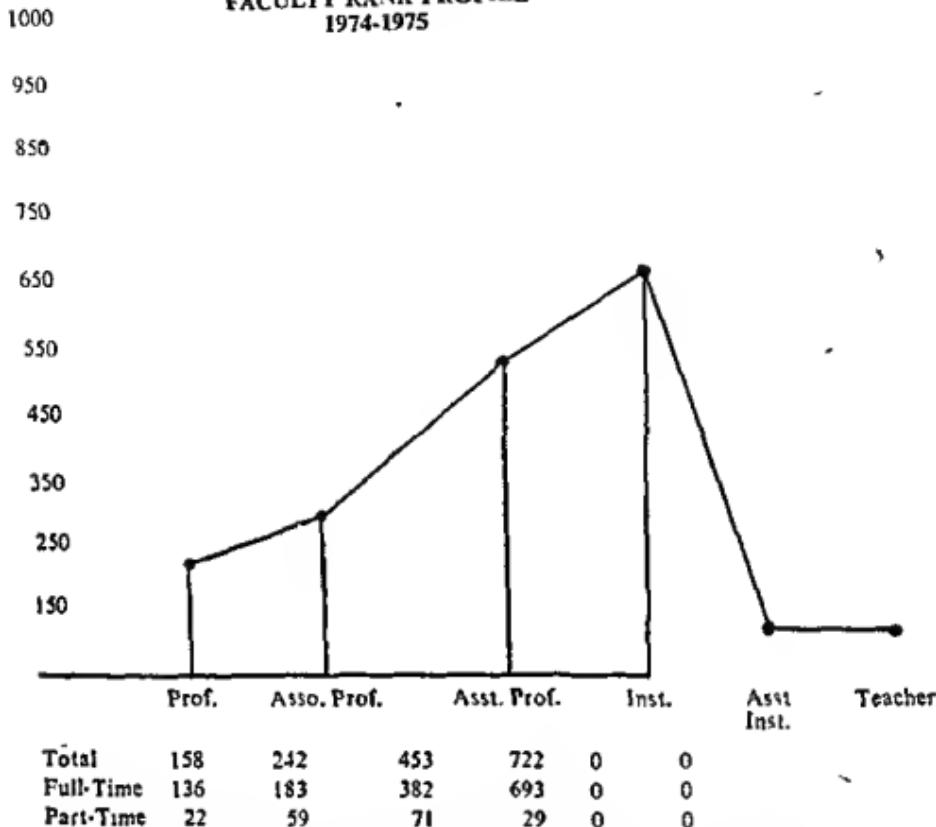
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FIGURE 4

**FACULTY RANK PROFILE
1974-1975**


were assigned to the various committees of the commission.

With the advent of Martial Law in the country, several faculty members have also been tapped to manage or help manage national agencies like the National Economic and Development Authority (NEDA), Central Bank, Budget Commission and as well as some private agencies, operation of which has been taken over by the government.

Thus, it can be said that the University is at the helm of the decision-making process in the country.

Academic Non-Teaching Staff (ANTS)

To bolster the research capability of the faculty, the University has an academic non-teaching staff with positions ranging from research aid to the specialists (management, training to the librarian) group. Although the number of ANTS is comparatively smaller than the administrative and faculty of UP, just the same

they contribute immeasurably to the undertaking and completion of research projects. Next to the faculty also, this group of personnel are deeply involved in community service and as such participate in seminars or training programmes as directing staff, resource persons, paper writers, or lecturer. In addition, ANTS with graduate or advance degrees are usually tapped to teach and are eventually integrated into the faculty. This often happens because research personnel are also allowed to go on special assignments or undergo special training locally or abroad as part of their staff development programme.

Administrative personnel

Providing support to the various services offered by the UP is the administrative personnel group which comprise about 67 per cent of the total personnel complement. Administrative personnel are covered by the Civil Service Commission (CSC) rules and regulations but like the rest of UP employees, they follow the UP salary scales. In 1971, the University adopted an Administrative Personnel Fellowship Programme enabling qualified personnel to pursue a college degree in the undergraduate or graduate level. To date, 4 have received their bachelor's degrees and 3 their masteral degrees under the programme.

Like the faculty and the ANTS, they also participate in projects by providing the administrative portion of the undertaking.

Physical facilities

The rapid expansion of programmes in the University, specially in line with its community service and research activities, has emphasized the need to improve its physical facilities. Originally built to house a few hundred students, the UP population of students, faculty and staff, has grown and reached a point where only the erection of new and much bigger buildings can solve the problem. To ease this situation, UP has undertaken a number of construction jobs so that by simply going around the campus, one gets a glimpse of the oldest and the latest in architecture.

A few of the newly-constructed edifices on campus are the Philippine Centre for Advance Studies (PCAS), Institute of Small Scale Industries (ISSI), Kalayaan Co-Ed Dorm, the Asian Labour Education Centre (ALEC), Studio complex and ALEX library and Oblation Plaza. Among the buildings that the University hopes to

erect in the next few years are the Public Affairs Complex, the Philippine Medical Centre, the School of Economics, and the Architecture Building. The plans for the Public Affairs Complex if finally pushed through will greatly enhance the University's capacity to undertake projects for the government through the consolidation of units deeply committed to such activities.

The Library

The University Libraries, consisting of one (1) main library and about 30 other unit libraries, service not only UP students but—to a considerable extent—research staff, and faculty members as well as outsiders who take advantage of its extensive supply of reference materials. For annual year 1975-76, total recorded usage of the library amounted to 2,655,055, broken down into circulation, Filipiniana, reference, periodicals, micro films and other matters.

The consolidated holdings of the University Library represent the widest collection of books, microfilms, periodicals and other printed materials in the Philippines. As of June 1976, its total collections amounted to 783,116 accessioned volumes, 18,510 serial titles, 4,029 periodical subscription, 12,195 microfilms, 2,619 radio-phono discs, 11,974 musical scores and 2,614 maps.

University finance

The National Government continued to be the main source of funds of the University at an average rate of 61.8 per cent of the total income of UP per year. Though representing a significant portion of government expenditures, actual releases were much lesser than budget appropriations as shown in the following table. A rather unfortunate situation in that education has to be confined within the realities of a developing country's limited resources.

Although the actual releases are lesser than the appropriated amounts, these contributions can still be considered substantial in the light of the country's tight financial situation at the time and the fact that the government supports, aside from UP, 33 other state colleges and universities.

To supplement its contribution from the government, the UP also taps other sources such as foreign and local foundations, United Nations agencies, fellowships and scholarships and other

<i>Fiscal Year</i>	<i>Appropriation</i>	<i>Actual Release</i>
1968-1969	38,511,000	P26,811,000
1969-1970	33,331,000	27,849,251
1970-1971	37,345,000	34,766,927
1971-1972	35,362,000	34,940,500
1972-1973	60,168,000	39,877,638
1973-1974	60,573,000	42,355,000
1974-1975	97,098,000	86,345,000
1975-1976	185,887,000	140,520,938.58

government entities, like the National Science Development Board (NSDB). As mentioned earlier, NSDB supports a number of research projects in the University and this has greatly eased the financial requirements for such endeavours. Table 5 will show the extent of foreign assistance to the University.

In the University's desire to further ensure and increase its resources, a proposed package of projects was submitted to the United Nations Development Programme (UNDP) thru the National Economic and Development Authority (NEDA), for probable funding. This proposal if approved will form a major part of the University's activities for 1977-78.

Fully aware of the need to ensure a continuous source of funds, the UP through its own resources, also manages a number of business enterprises such as the Land Grants, Servicenter, Book Centre, Gold Course, and residence halls. These business enterprises have been regular sources of support and studies are continuously being undertaken to further improve the productivity of these investments. It is hoped that the maximum productivity of these enterprises will allow the University more flexibility in the allocation of its resources.

The Regional Units¹

Recent emphasis on regionalization of government planning and administration as well as the recent thrust on countryside development required an appropriate response from the University. Besides, education and training should be geared to the peculiar ecology of locality—the cultural traits and specific needs of the

¹Most of this portion of the report was drawn with slight revisions from the University of the Philippines System Annual Report, 1974-75.

TABLE 5. Summary of grants received for AYS 1974-75 and
AYS 1975-76

	<i>Ph.D.</i>	<i>MA</i>	<i>Diploma</i>	<i>OBS.</i>	<i>Total</i>
		<i>MS</i>	<i>Training</i>	<i>RES.</i>	
Rockefeller Foundation		2			
Nambusho Scholarship		1		1	
Japan Foundation Sr. Fellowship				1	
BIOTROP				2	
Ford Foundation	3			4	
SEAMEO/TROPMED		3		8	
RECSAM				1	
3M Minnesota Fellowship				1	
Bilstual Agreement				7	
Colombo Plan	1	8		17	
WHO/UN/UNESCO and other fellowship	2	1		18	2
IAEA				2	
French Govt. Fellowship				2	
Andres Soriano Cancer Fund Drive				1	
NEDA/USAID	2			4	
Family Planning Int'l. Assistance				1	
UP Full Fellowship	1				
Int'l. Nursing Foundation				1	
Fullbright Fellowship	1				
Technonet Asia				5	
Asian Productivity Organization				2	
Spanish Government	1				
Assistantship from Univ. and on their own	3			1	
Harvard Com. on Pop. Eco.			1		
China Medical Board of New York				2	
Institute of South East Asian Studies				1	
Orff Inst.				1	
NORAD				1	
Japanese Govt.				1	
SIDEC		1			
Netherland Government				1	
Philips Inst. of Techn. Studies				1	

SOURCE: (1) Fellowship Data File, Covering the periods July 1974-June 1975, OAS.

(2) OAS Annual Report, AY 1975-76.

people. The University has therefore been transformed from a "multi-versity to a multi-campus university with UP at Los Banos as its first autonomous campus."

The regional units are in a vantage position to devise programmes that are responsive to the needs and aspirations of the people in their regions while maintaining the high standards of the University. They provide access to higher education in the regional areas where they are situated.

The diversified and increased volume of activities of the UPLB led to the establishment of three new units: the Centre for Policy and Development Study, the Institute of Human Ecology, and the Institute of Plant Breeding. These units are expected to play a major role in policy formulation and implementation on agricultural resources and their maximum utilization and conservation.

The UPLB is expected to assume an increasing role in agricultural and national development with the generous support it receives from the government, foundations, the private sector and other institutions.

The regional units of the University located in Baguio, Cebu, Clark Air Base, Iloilo and Tacloban offer undergraduate courses such as A.B., B.S. and B.B.A. and graduate programmes in Public Administration, Masters in Business Administration, Management and Education. UP College Cebu started to offer a 3-year certificate programme in Fine Arts.

To be responsive and relevant to the various and changing needs of their clientele, the regional units focus their attention on the re-examination and re-orientation of their curricular offering, faculty staff development and the expansion of their physical facilities and equipment. Closer link have been established with other government agencies, private organizations and institutions through training programmes, seminars and other community projects and activities. The UP College Baguio, for example, entered into an agreement to conduct for the National Electrification Administration a survey and evaluative study of the economic and social impact of rural electrification within the La Union Electrification Cooperative service area. The UP Institute of Health Sciences at UP Tacloban has embarked on a bold and innovative approach toward rural educational health programme by producing functional health workers at various levels of the curriculum covering the whole spectrum of health care delivery system.

To further strengthen the sense of community in the region, the regional units hold or conduct cultural presentations such as the UP College Baguio's Astan Art Festival, the UP Extension Division Clark Air Base's lecture series on Philippine Culture and the UP Iloilo's festival on Visayan culture.

For a more effective and increased involvement in national development programmes, the regional units have articulated for more fiscal support and more efficient servicing of regional units from the central administration at Diliman and for the expansion and improvement of physical facilities and equipment.

To strengthen and accelerate the development of regional units, the Board of Regents has institutionalized the Committee on Regional Matters (CRM) to serve as a staff to the UP President and assist central administration in the formulation of the developmental thrusts for regional units and to serve as the liaison between them and the central administration.

Developed-oriented research

Research has been the University's principal instrument in discovering new vistas and drawing fresh insights in our developmental landscape. The basic and applied researches undertaken by the UPS are today among the most creative and productive elements in our society. The University's investment in applied research for agriculture and industries is one of the principal factors for economic growth. From 1969 to 1973, UPS had 1,692 completed researches and 1,041 on-going projects.

The University undertakes research in almost all fields of learning, the main bulk of which are in areas directly in the mainstream of national programmes, such as food production public health, agrarian reform, cooperatives, labour laws, nutrition and family planning, energy and manpower development.

The University monitors and coordinates the research of different units through the Office of Research Coordination. During the past academic year, this Office administered 97 University-supported projects conducted under the National Science Research Committee—the Social Sciences and Humanities Research Committee, and the UP-NSDB Integrated Research Programme. Eighteen of these were completed during the year; the rest were on-going.

NSDB, the government's main research funding arm, other government agencies, private foundations and institutions and foreign sources. This favourable development and the improved coordination of research activities made it possible to acquire additional research facilities and equipment, finance publications and bulletins, and offer more research incentives to the faculty.

Research outputs are important inputs for national development if they are properly communicated to end-users for consumption or implementation. An efficient communication system between researchers and end-users is therefore imperative.

Researchers have now broken away from their complacency and "ivory towers" because they now realize that it is imperative and relevant to share their outputs with the rest of society.

Toward a more fruitful partnership between researchers and end-users, the NSDB-UP Integrated Research Programme has embarked on a more serious research linkage programme to disseminate the products of its research to end-users over the widest area possible. Research linkages are established through seminar-workshops, publications, consultations, conferences and mass communication channels.

More specific and concrete examples of this research linkage programme are the First NSDB-UP Research Linkage Workshop held in Baguio in May 1977 and the 2 dissemination seminar-workshops held in 1976 and early this year which have provided a forum for the exchange of ideas on various development priority areas. The expansion of the mass communication channels of the programme is exemplified by the creation of the *Ugnayan*, the forthcoming publication of the comic-style *Saliksik*, and the radio programme featuring UP faculty researchers. On the regional level, the UP Institute of Mass Communication co-sponsored the 6-day First Regional Workshop on Cooperative Research held at the Development Academy of the Philippine with 25 Asian communication specialists from 11 countries participating. The main objectives was to meet the need for cooperative research which will serve the development goals in the region and draw up recommendations on the design and conduct of cooperative studies in the participating countries.

With a strengthened research linkage, research findings will eventually wind up not only in libraries, but also in homes, crop-lands, factories, schools, hospitals and even markets and playground.

The academic programme

By accepted academic standards, the University has long been as outstanding institution of higher learning. Its most significant role as a teaching institution is the production of high-calibre manpower indispensable to national development.

The University has been referred to by its last former President, as "the lamp of truth emitting the light of freedom." Veritably, the University has the largest pool of competent "brainpower" in the country and is, therefore, in a position to be the "guiding light" of the Republic.

The hallmark of a university is its contribution to the advancement of knowledge. The UPS has utilized its curricula as a powerful instrument to power national development. As of June 1975, the University has 36 colleges and schools offering 114 undergraduate programmes leading to baccalaureate degrees and 14 undergraduate diploma or certificate degrees. On the graduate level, it had 29 doctoral programmes, it had 114 programmes leading to master's degrees, and 13 graduate degree certificate programmes. The University has attained the reputation for excellent work nationally and internationally. A UPS degree is considered a mark of excellence, distinction and prestige. A good number of UP alumni have become leaders not only in their professions or fields of specialization, but in their community; many have even attained national and/or international stature. Indicative of the growth of the academic of the academic programme is the steady increase in enrolment, graduates, areas of specialization, and the spreading out of its branches to other areas of the country.

In the context of national development goals, the first role of schools, colleges and universities is to provide students with a general education to widen the range and improve the quality of their participation in the basic functions of society; also to enable them to acquire the foundation for their development into "productive and versatile citizens." Undergraduate enrolment for all units of the University System excluding UP at Los Banos was 18,487 for the first semester and 17,564 for the second semester last academic year. With a view towards a more relevant and responsive academic instruction, the University continually reassesses and reorients its existing programmes and establishes new academic courses and degree offerings. The College of Veterinary Medicine, for example, has shifted its attention from treatment of animal diseases to animal

TABLE 6. *Enrollment in the University SY 1970-75*

Category	1970-71				1971-72				1972-73				1973-74*				1974-75**			
	<i>Ist Sem.</i>		<i>2nd Summer Sem.</i>		<i>Ist Sem.</i>		<i>2nd Summer Sem.</i>		<i>Ist Sem.</i>		<i>2nd Summer Sem.</i>		<i>Ist Sem.</i>		<i>2nd Summer Sem.</i>		<i>Ist Sem.</i>		<i>2nd Summer Sem.</i>	
	<i>Ist Sem.</i>	<i>2nd Summer Sem.</i>	<i>Ist Sem.</i>	<i>2nd Summer Sem.</i>	<i>Ist Sem.</i>	<i>2nd Summer Sem.</i>	<i>Ist Sem.</i>	<i>2nd Summer Sem.</i>	<i>Ist Sem.</i>	<i>2nd Summer Sem.</i>	<i>Ist Sem.</i>	<i>2nd Summer Sem.</i>	<i>Ist Sem.</i>	<i>2nd Summer Sem.</i>	<i>Ist Sem.</i>	<i>2nd Summer Sem.</i>	<i>Ist Sem.</i>	<i>2nd Summer Sem.</i>	<i>Ist Sem.</i>	<i>2nd Summer Sem.</i>
Undergraduate	15,268	14,840	7,757	16,211	14,888	8,524	16,852	15,052	—	14,407	13,790	—	18,487	17,564	—	—	—	—	—	—
Graduate	2,555	2,566	2,096	2,938	2,841	1,902	3,135	2,681	—	3,114	2,985	—	3,745	3,707	—	—	—	—	—	—
Non-Collegiate	2,375	2,374	—	2,578	2,567	—	2,975	2,955	—	2,908	2,902	—	3,071	3,119	—	—	—	—	—	—
Total	20,198	19,780	6,853	21,727	20,296	10,426	22,962	20,688	—	20,429	19,677	—	25,303	24,390	—	—	—	—	—	—

SOURCE: UP Registrar's Office.

The President's Five-Year Report.

UP System Annual Report, 1974-75.

*Excluding College of Agriculture, College of Forestry and UP at Tarlac

**Excluding UP at Los Baños.

alternative approaches to common human problems, and emphasis on the teaching and acquisition of human knowledge as an integrated process.

The past year, the UPS entered into new agreements on selected programmes with other institutions of higher learning⁴ to attain common objectives in joint degree and/or joint research programmes, based on fair and reciprocal sharing of responsibilities and utilization of resources.

The University, through its academic programme and pool of experts, promotes better social services in health, nutrition, social justice and employment, thereby contributing to national development and emancipating a broad mass of Filipinos from poverty and making possible a more equitable distribution of goods and social services.

The University has produced an embarrassingly large proportion of Filipino leaders, whose responsiveness and competence have been tested in various aspects of nation-building. UPS alumni staff, the commercial and industrial firms of the nation and the government service, occupying key positions from top management to middle-level technicians. They actively participate in the national efforts to modernize industry and contribute to economic development.

Some specific and recent examples of notable UP Alumni are the present President of our Republic, the father of Philippine sculpture, and the father of chemistry education in the Philippines. Eight out of the 10 recent TOWNS (The Outstanding Women of the New Society) awardees in 1974 are presently or formerly connected with the UPS as alumnae and/or members of the faculty. This award honours Filipino women who have made significant contributions to the country and the Filipino people as well as to their professions.

The progress achieved by the University in higher education has won the recognition and support of American foundations and has attracted Asian students to its course offerings.

Extension services

One notable trend over the past decade has been the increasing

⁴Some of these were De La Salle College, Brent School in Baguio, the Philippine Military Academy, the Central Philippine University and West Visayas State College.

demand for consultative services and technical assistance from the University. The UPS has been sensitive and responsive to the needs and problems of Philippine society and has been alert to opportunities for service through education, training and consultancy.

Community or extension service has attained parity with teaching and research as one of the primary functions of the University. UPS has made available its expertise and resources to the nation's policy-makers, national leaders, government agencies, private organizations and associations, and individuals in the country. Members of faculty of the University have assisted the national government in its policy studies and have been tapped as panelists, experts, paper writers, and resource persons in significant government programmes and projects at all levels. Several units of the University are implementing agencies for development projects; others have "technical assistance" links with corresponding agencies whose works are along their fields. Some examples of these linkages are College of Engineering with the National Power Corporation and National Irrigation Administration; College of Public Administration with the Presidential Reorganization Commission and the Civil Service Commission; the Local Government Centre with Department of Local Government and Community Development; the Institute of Public Health with the Department of Health and the College of Agriculture with the Departments of Agriculture and Natural Resources.

The UPS has the largest pool of experts in almost any field. They are available on loan and are being asked to assist government agencies, educational institutions, or private enterprises on how to run their business and manage their affairs more efficiently.

Upon official request, a considerable number of the faculty have been detailed to key governmental agencies. Many more are consultants not only in regular agencies, but also on commissions or task forces concerned with agricultural productivity, land reform, forestry, cooperatives, educational reform, and governmental reorganization.

There is no doubt that technical consultants, coming mostly from the UPS influenced the ideas, critiques and proposals in the 1970 Survey Report of the Presidential Commission to Survey Philippine Education which was supposed to establish "new patterns" and "new directions" in education.

Other examples of consultancy work can be cited. The Local

Government Centre of the University was asked by the Quezon City Government to prepare and develop a position classification and compensation plan for its personnel. University expertise and/or facilities were supposed to have been made available in the preparations of a long-range programme for educational broadcasting in the Philippines.

Many professors are on special detail to developmental agencies of the government. The Institute of Environmental Planning, for example, provided technical assistance in the planning and programming toward the development of the Bicol River Basin Area.

Many faculty are members of standing policy bodies or of study commissions and inter-agency committees which are assigned to review existing, and to formulate new, developmental policies and programmes. UPLB had been asked to assess the economic impact of the agricultural credit programme and to conduct studies on the sociological/social-anthropological, engineering and administrative aspects of the credit programme. The Institute of Mass Communication was asked to evaluate the success or failure of family planning motivators in the Philippines. The Population Institute provides professional demographic research and evaluative services to the Philippine population programme. Two UPS professors were named by the Philippine President to the Presidential Committee to Review the Code of Filipino Muslim Laws. Different units of the University have on several occasions participated in codification and law reform projects.

Closer links have been established between the University and national developmental planners through the pattern of new technocracy, a trend which started in the mid-sixties when the government technocrats previously recruited from business and financial circles were joined by university men. This new pattern is reflected by the fact that six members of the present cabinet are former deans/professors of the UPS, while a much larger number of academicians are now holding positions at sub-cabinet and bureau director levels.

The extension programmes and activities, particularly non-degree courses conducted by the academic units, training centres and institutes of the University vary and cover a wide range of services to our national leaders, and policy-makers, government agencies, private organizations and associations, and individual and groups

in the country. These non-degree programmes provide a continuing education and allow the formation of competent cadres in government and in the private sector, knowledgeable both in theory and techniques, which will propel the country's development. The following are some examples of these extension services:

(1) Training programme by the College of Education (jointly with the Population Education Programme, Department of Education and Culture) in research utilization in population education for 24 public school research supervisors.

(2) Training programme by the UPLB (jointly with the Bureau of Vocational Education) for vocational teachers, farm managers, administrators and supervisors who shall directly implement the supervised farming programme in each of their project institutions.

(3) Adult vocational classes by the University High School to develop marketable skills in some home making activities such as cooking, dressmaking, tailoring and food preservation. The programme was open to housewives, household help and out-of-school youths.

(4) Local Administration Development Programme (LADP) courses by the Local Government Centre (LGC) for local government scholars of the Department of Local Government and Community Development (DLGCD).

(5) A series of training programmes conducted by the LGC for the new PDAP provinces and members of the PDS.

(6) Training course for paramedics by the UP Comprehensive Community Health Programme Training Centre (jointly with the NMYC and the Department of Health) which gives emphasis on the preventive aspect of health care.

(7) The UP-Bureau of Vocational Education (BVE) Health Education Teacher Training Programme conducted in the College of Education. The aim of the course is to improve health education and its supervision in vocational schools through the advanced training of teachers, instructors, coordinators, physicians, nurses and dentists.

Seminars are also conducted as indicated below:

(1) Seminar on the New Constitution conducted by the UP

Law Centre (jointly with the DEC to provide mentors⁵ with an indepth new of the New Constitution.

(2) Seminar on educational management conducted by the College of Education (jointly with the College of Business Administration for 16 administrators of private and state colleges and universities to enable the participants to make use of management techniques in business and industry so that they may efficiently plan and control college or university operations).

(3) Seminar on a volunteers training programme conducted by the ISWCD to orient 24 executive directors of newly-organized community chests and councils around the country to their jobs.

(4) Seminar-workshop on Drug Education for Trainers, Second Level Training Programme conducted by the College of Education (jointly with the DEC). This was a cooperative approach among teachers, government, health and social welfare agencies to meet the challenge of drug abuse.

The College of Education Dean was designated project director and chairman of the Committee for Drug Education, the implementing arm of the Drug Education Coordinating Council which was conceived in January 1972 because of the urgent need for educating standards on the proper use of drugs.

The overall education plan then was to develop a drug education programme and to guide the individual to think critically and make wise decisions.

These are only a few of the many evidences of the wide acceptance of the expanded role of the University as an agent of social change and development and of its increased capacity to contribute to national development planning and implementation.

⁵The term mentors includes 217 school supervisors, department heads, classroom teachers and administrators at the elementary, secondary and higher education levels from almost all the provinces of the Philippines.

5 History as a Field of Study in the University of the Philippines

The important influence of historical forces in the development of society is regarded as a modern development. Previously, history as a field of study was regarded merely as a compendium of events and actions that make up the human past. Constrained by this narrow perspective, history was not given any importance as a field of study and consequently, with this sterile viewpoint, it was not looked upon as a source of an interpretation or understanding of human life as a whole. The latter function was deemed more appropriate for religion, philosophy and even poetry.

From this approach to history as mere recording of events and actions, there has been a shift towards a history of ideas and intellectual movements. Modern historians while reconstructing an accurate record of past events and activities now also provide a more profound understanding of them. The notion of philosophical reflection of the human past, while by its speculative nature is open to more than one interpretation, is by the same token the object of more analytical approaches. It is with this analytical and more dynamic perspective that history as a field of study provides valuable contributions to human development.

The role of history in university education

These developments in historiography and in the study of history had a profound effect on the Philippine setting for among the different fields of study in the humanities, history plays an important role along with the languages (particularly English).

However, while English has in fact been the main medium of instruction and communication, there is now an increasing level of acceptance and use of the Filipino language both in communication and as a medium of instruction. This shift towards a greater sense of national values is also reflected in the field of history, particularly Philippine History, and may even have some influence on

the new trend of nationalistic values and norms.

Diffusion of historical knowledge

Considered one of the traditional disciplines, history is an important part of the curriculum in Philippine education and is a required subject of study at the grade school, high school and, in some cases, at collegiate levels of both private and government educational institutions.

For the greater part of the existence of the University, the curriculum programme has remained basically the same since the Department of History was instituted. The only significant change took place in 1971 and involved mainly the integration of existing courses to avoid proliferation and overlapping of courses; thus Chinese and Japanese history were merged into Asian History.

At the University of the Philippines, two history subjects, (a) Philippine History, and (b) Asian Civilizations, are presently required for all undergraduate courses. Teaching emphasis has always been on Philippine areas despite the strong American influence on Philippine education, particularly when the subject Philippine-American history was taught before and after the Second World War.

Thus while the course offerings of history cover the wide scope of the history of civilization (e.g. Asian, European, etc.), focus is on the Philippine area in its relation to other countries. Along this line, in-depth studies and a textbook on Philippine History were made to form most of the course materials required to support the programme.

Aside from teaching the regular history subjects to history majors and undergraduate students, the Department, as part of its academic service function, also provides history courses for students taking the Foreign Service course.

Academic and Professional Manpower. The UP Department of History is part of the College of Arts and Sciences, the biggest college in the university system and was already in existence even before the Second World War. With its traditional courses in Philippine History and Institutions I and Asian Civilization in the University General Education Programme, the Department of History devotes more than half of its faculty resources to service an average of fifty sections every semester. This, in addition to those enrolled in the Department itself for their advanced history

subjects, make up the regular teaching load of the faculty.

This concentration of faculty resources in teaching has adversely affected the Department in more ways than one, particularly, the involvement of its staff members in research work for curriculum development. Despite these constraints, it has plans to expand its undergraduate curriculum and to establish a Ph.D. programme soon primarily through the recruitment of additional faculty members.

Faculty composition has, since 1973, remained basically the same with much of the changes being in promotions to professorial rank. A more significant change planned is the upgrading of the degree qualifications of those with instructor's rank, such that they would at least have a master's degree.

Student enrolment for the course of study leading to the degree in Bachelor of Arts major in history has remained constant at about 40 per semester for the past five years. On the other hand, there seems to be an increasing trend, though moderate, in the enrolment figures for the history graduate degree programme.

Textbooks and publications

The development of indigenous textbooks and related materials for History subjects has generally been very slow. Thus although the University has been in existence since 1908, it was only half a century later when a textbook on Philippine history was developed and written by UP Professors. In this regard, the publication and use of *A Short History of the Filippino People* as an introduction to Philippine History under the University's General Education Programme was quite an achievement.

From the point of view of Philippine historiography, the textbook by Professors Teodoro A. Agoncillo and Oscar M. Alfonso is also a significant contribution for the book is a radical departure in its viewpoint from any textbook that has been published on Philippine history. The book is the first about the Filipinos from the Filipino point of view. This viewpoint was not arbitrarily taken nor were the historical facts distorted for the sake of nationalism. In the words of the authors themselves, they simply thought:

History is concerned with truth first and last. What is meant here is that where the facts warrant two or more interpretations the authors naturally took the Filipino viewpoint. To cite an example, it has been customary for . . . historians and teachers

to say that Magellan discovered the Philippines. This may be true in so far as the Spanish chroniclers are concerned; but . . . the Filipinos already had cultural and commercial intercourse with the peoples of Southeast Asia centuries before Magellan was born. From the Filipino viewpoint, how could Magellan have discovered something which has been known to many even before his time?

Since then, several books and papers have been published and authored by people of the UP's Department of History. Not only concerned with the important function of rewriting Philippine history, the recent works are also involved in the search for the Filipino identity through historical writings on evolution of the Philippine republic and Filipino nationalism, and of the culture and history of the various Philippine cultural minorities.

The Department has also started a project to prepare a textbook on Asian Civilizations.

Historical research

With these noteworthy contributions to Philippine historiography, the Department of History has remained prolific in this area with even more distinctive research. Research completed in the school year 1974-75 were basically in three areas:

- (1) The Filipino psychology and Philippine language which included works on bilingualism, the Filipino psychology in its historical perspective and on Philippine nationalism.
- (2) Biographies of great Filipino scientists under which were completed the biographies of Dr Honoria Acosta-Sison and Dr Manuel L. Roxas.
- (3) Historical works on the Asian ties of the Philippines which has been in the past a neglected area having been dominated by the Western influences on the Philippines.

Extension and community services

The Department's faculty and staff despite the heavy teaching load have involved themselves actively in extension and community services. Many of them are members and heads of different historical councils, associations and government agencies.

Among the more prominent ones are Professors Teodoro

Agoncillo and Serafin Quiazon who are members of the National Historical Commission. Professor Quiazon is also the director of the National Library. Dr Oscar M. Alfonso is the Secretary of the University of the Philippines and of its Board of Regents.

Professor Bonifacio Salamanca is the dean of the U.P. College In Manila while Dr Romeo Cruz is the dean of U.P. Clark Air Base. Dr Samuel Tan is a member of the National Special Projects Committee with the Office of the President, Malacanang.

Role in national development and integration

Development objectives have generally been defined in purely economic or physical terms and consequent to the failure or inadequacies of developmental plans designed along this narrow definition of economics, there came about the realization that development covers a much wider scope of human activity that includes attitudes of the people, the various scientific disciplines, and the introduction of many forms of expertise.

In such a broad context of development, the role of the UP Department of History in national development will be better appreciated for the department's major thrust is to inculcate nationalistic values in the minds of its students. With this as its primary function, the department made two significant contributions: first in the search for a truly Filipino identity, and second, in the rewriting of bistory.

As a factor in national development, the search for a Filipino identity makes an impact in terms of forming a group consciousness of some nationalistic purpose. Constantino refers to this as the "liberation of consciousness" so that the people may act to secure their "economic liberation." The strength of this as a force towards the attainment of developmental objectives can indeed be very substantial. In an exhaustive study of the nature and origins of nationalism, Kahn concluded that in recent times it has been the power of an idea, and not the call of blood, that has formed and moulded national ties more specially in modern times. He emphasized this even further with the conclusion that the most essential element of nationality is a "living and active corporate will."

In view of its colonial past, the idea of a national identity is even more crucial to the Philippines. A former President of the University of the Philippines, describing the role of the University to national development, analyzed the situation thus:

We must first understand the crippling effects of our colonial experience and then proceed to remedy them . . . But our colonial experience has left a deep imprint on the national psyche. It has taught us to be uncritical in our thinking, incapable of seeing the realities of our own society.

Accordingly, the department aside from its primary function of teaching nationalistic values, has made several researches on Philippine History and disseminated the findings in publications and textbooks as well as through lectures. Indirectly, the alumni of its history courses have also made significant contributions to nationalistic policies and programmes of the government.

In terms of more concrete physical outputs, the department has also contributed much towards the rewriting of Philippine history. Foremost among them is the textbook on Philippine history by Agoncillo and Alfonso. Others are Renato Constantino's *The Past Revisited*, Oishi Mahajani's *Philippine Nationalism* and Onofre Corpuz with his *Ang Pagkabuo ng Nasyonalismo* (The Formation of Philippine Nationalism).

Among the more prominent alumni of the University, President Ferdinand Marcos recently completed the first volume of his *Tadhana* which is envisioned to be a 18-volume history of the Philippines. In addition to his writings, President Marcos being cognizant of the role of history in national development recently asked the National Historical Commission to propose measures to improve the position of the history teacher in Philippine education and to enhance the teaching of history.

6 The School of Economics

The importance of economics

Economics is a social science which studies the allocation of scarce resources among their alternative uses in order to achieve certain given ends. Economics is a pervasive subject that confronts all individuals and all nations today. There is always the problem of scarcity in the face of ever-growing human wants. Any group has limited resources with which to satisfy unlimited wants.

Because of the complexity of modern economic society, an educated individual must learn economic principles to be able to solve his own economic problems and intelligently follow current national economic issues. More importantly, the economic problems of the nation cannot be left to chance. This is especially true in developing countries, like the Philippines, which are concerned with more material or economic problems than more advanced countries are. The increased focus on development by the New Society and the new regional emphasis in planning and implementation give added significance to economics courses in the Philippines.

A course in economics is designed to give the student a thorough grounding in the logical and mathematical analysis of economic problems and teach him the principles of finding the solutions to these problems, appropriate to the country's needs. The matriculation fee ranges from ₱ 238.00 to ₱ 1,212.50 a semester depending on the school in which one enrolls. The course in business economics deals with the fundamental concepts, principles and problems of modern economic society. It trains the students to effectively apply the economic principles to business policies and operations, based on research and evaluation of business and economic data. The matriculation fee ranges from ₱ 238.00 to ₱ 750.00 a semester again depending on the school in which one enrolls. Both of these courses can be completed in four years.

Historical background

The history of the School of Economics dates back to 1926 with

the establishment of the Department of Economics in the College of Liberal Arts. In 1929, the department was detached from the College to become the nucleus of the School of Business Administration (later the College of Business Administration in 1934) until the outbreak of the Second World War. After the war, the department again became a part of the College of Liberal Arts.

Efforts in the mid-fifties to coordinate economic research in the University culminated in the creation in 1957 by the Philippine Congress of the Institute of Economic Development and Research (IEDR) at the University of the Philippines.

The School of Economics was formed in July 1965 out of the merger of the Department of Economics of the College of Business Administration and the IEDR.

Organizational structure

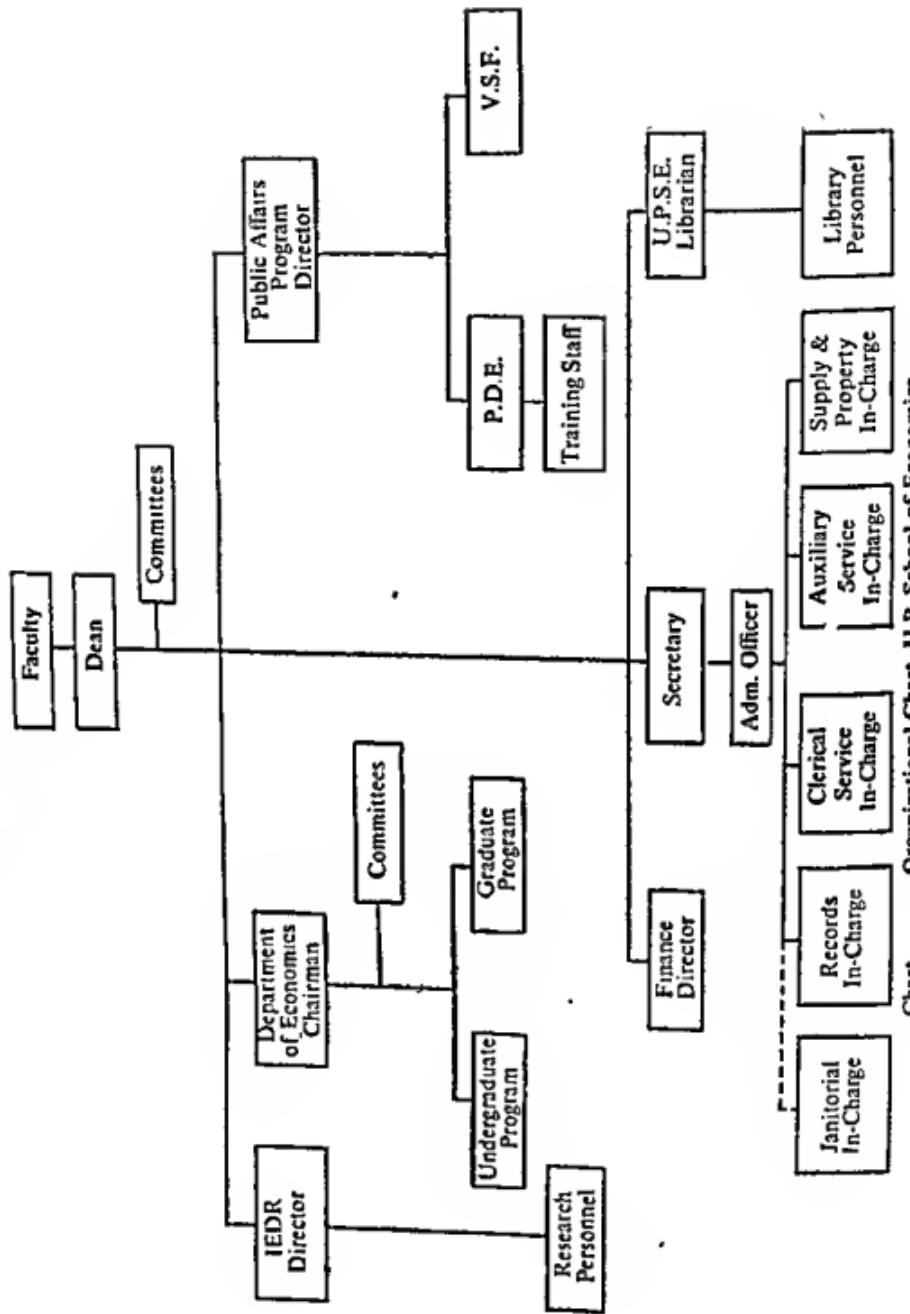
The UP School of Economics (UPSE) is one of more than 45 academic units of the UPS. It offers degree and training programmes and conducts researches in economics. As shown in the accompanying organization chart, the School tries to achieve these objectives through three line departments, namely, the Department of Economics, which handles the degree programmes; the IEDR, which manages research activities; and the Public Affairs Programme. The latter is an administrative unit designed to involve the School more deeply in public affairs. It also administers the UP Programme in Development Economics (UP PDE).

The School is headed by a Dean appointed by the Board of Regents upon recommendation of the President of the University of the Philippines System. He is assisted in the administration of the School by a School Secretary, a Finance Director, and by three Department Chairmen.

Student profile

A student in economics should have an aptitude for mathematics and should have an inquisitive and analytical mind. He should be accurate, persistent and hardworking, interested in economic affairs and research, able to evaluate objectively and to communicate well with others. The undergraduate student is about 18 or 19 years of age when he enters the UPSE in his junior year after having successfully completed two years of course work in the College of Arts and Sciences.

Chart 2 Organizational Chart, U.P. School of Economics



Organizational Chart, U.P. School of Economics

The students at the School come not only from the Philippines, but also from other South East Asian countries like Burma, Hong Kong, Thailand, Indonesia, Malaysia and Vietnam. In fact, foreign students comprise the significant part of the graduate student body.

A relatively large number of graduate students who had completed the academic course requirements got delayed in thesis completion due to their employment in government or private offices which provided little or no opportunity for thesis research. In recent years, these students have been encouraged to get involved in faculty research projects on condition that they devote most of their time to thesis work related to these projects. Beginning with the academic year 1975-76, stipends/salaries of thesis students working as fellows or research assistants in the School have been adjusted to make the rates competitive with employment outside.

According to the School's 1974-75 annual report, virtually all registered graduate students of the School including foreign students are on full-study time. They are supported by School fellowship funds from UP or from grants from the Rockefeller Foundation and the Ford Foundation or by external funds from the National Economic and Development Authority (NEDA), First National City Bank (FNCB), United States Agency for International Development (USAID), Agricultural Development Council (ADC), South East Asia Treaty Organization (SEATO), and International Development Research Centre (IDRC).

Graduates

The UPSE produces graduates to staff universities and the more technical government jobs and to undertake advanced research on national development policies and planning. It had its first doctoral graduate in April 1975 and the second one this school year. The total number of graduates of the School from 1970 to 1975 are shown in Table 7.

An annual reception for graduating students, both graduate and undergraduate, is given by the faculty. This culminates in the awarding of the Dean's medals to outstanding graduates and those who wrote outside senior research papers. Similarly, reunions are also held by the Intersectoral Development Economics Alumni League (IDEAL), an informal organization created to consolidate the graduates of the UP PDE into a more effective and coordinated national planning group.

TABLE 8. Changes in the Number of Personnel FY 1974-76

Category/Number of Personnel	As of June 30		
	1974	1975	1976
<i>Academic</i>			
(a) Professor	3 ^a	4	4 ^a
(b) Associate Professor	1	4 ^{a&g}	6 ^{b&g}
(c) Assistant Professor	8 ^h	11 ^d	12 ^e
(d) Instructor	8 ^f	4	8 ^c
(e) Visiting Professor	3	5	5
(f) Senior Lecturer	1	1	0
<i>Academic Non-Teaching</i>			
(a) Research Assistant	9	14	36
(b) Research Aide	4	6	3
(c) Training Associate	1	1	1
(d) Researcher	1	3	3
(e) Programmer		2	3
(f) Senior Research		4	3
(g) Assistant Research Associate		2 ^g	2 ^g
(h) Consultant		2 ^f	3 ^f
(i) Training Coordinator		1 ^j	
<i>Administrative</i>	27 ^k	27 ^a	28
Total	67	90	117

^aOne on leave^bTwo on leave^cThree on leave^dFour on leave^eFive on leave^fPart-time^gOne on part-time basis^bOne is on study leave^jOnly five are in residence^jAn appointee to take the place of the Training Associate who is resigning^kOne is a substitute for another who is on leave

(B.S.B.E.). Both programmes require 129 units of course work, 30 units of which are economics courses. Since 1972, the B.S.B.E. programme has been offered jointly with the College of Business Administration to produce graduates who are versatile in either economics or business. Thus, the course requires at least 24 units each for both management and economics courses. Until 1967, the A.B. Economics degree was conferred by the College of Arts and Sciences. However, in 1968, students majoring in economics obtained their degrees from the School of Economics.

TABLE 9. Enrolment 1972-73 to 1975-76

Course Year	1975-76						1st Sem.	2nd Sem.	1st Sem.	2nd Sem.	1st Sem.	2nd Sem.	1st Sem.	2nd Sem.								
	1971-72		1972-73		1973-74																	
	1st Sem.	2nd Sem.	1st Sem.	2nd Sem.	1st Sem.	2nd Sem.																
A.B. Economics																						
Juniors	68	66	59	58	32	29	46	49	68	61												
Seniors	75	59	44	57	54	48	36	41	37	48												
Sub-Total	143	125	103	115	86	77	82	90	105	110												
B.S. Business Economics																						
Juniors	2	6	38	50	48	64	67	64	81	77												
Seniors	—	—	4	7	42	41	49	56	42	59												
Sub-Total	2	6	42	57	90	105	116	120	123	136												
M.A.																						
First Year	32	26	46	35	40	35	38	37	51	48												
Second Year	17	17	16	17	26	39	26	28	25	26												
Sub-Total	49	43	62	52	66	74	64	65	76	74												
Ph.D.																						
Second Year	5	5	5	3	7	7	12	14	8	11												
Third Year	3	3	4	3	2	3	3	3	11	6												
Fourth Year	—	—	5	5	2	5	5	4	3	2												
Fifth Year	—	—	—	—	—	—	—	—	—	—												
Sub-Total	8	8	14	11	11	15	20	21	22	21												
Total	202	182	221	235	253	271	282	246	326	341												

from an average of 138 for the two semesters of academic year 1971-72 to an average of 159, 179, 204 and 237 for the two semesters of each succeeding year. Likewise, total enrolment for the undergraduate and graduate programmes steadily increased from an average of 192 for the two semesters of academic year 1971-72 to 228, 262, 289 and 333 for the two semesters of each succeeding year.

Enrolment in the graduate programmes of the School from 1971 to 1976 are shown in Table 9 also to have increased noticeably. It is to be noted that enrolment in Ph. D. courses increased from an average of seven in 1973-74 to an average of 14 in 1974-75. The average M.A. enrolment of 65 in the two semesters of 1974-75 increased to an average of 75 the following year, showing 15 per cent increase between the two academic years.

The School services the requirements of other units of the University for economics courses. It consistently has enrollees in excess of 1,000 students from other colleges such as the Colleges of Arts and Sciences, Engineering, Mass Communication and Engineering. Enrolment in economics service courses from 1970 to 1974 are indicated below.

TABLE 10. *Enrolment in Economics Service Course
1970-74*

Year	No. of Classes	Enrolment
1970-71	86	2,872
1971-72	71	2,965
1972-73	71	2,584
1973-74	73	1,582

During School year 1974-75, it was possible to offer a wider selection of undergraduate courses taught by relatively senior faculty members.

The graduate programme is the most significant academic offering of the school. It is a scholarly inspiration for the faculty and a fertile recruiting ground for teachers for the UP and other educational institutions in the Philippines and South East Asia.

At the graduate level, the School offers the masters programme leading to the degree of Master of Arts in Economics (M.A. Economics) and the doctoral programme towards the Doctor of

Philosophy (Pb.D.).

The M.A. Economics programme began in 1932 under the College of Liberal Arts, but it was not until 1964 that the School of Economics began offering a regular masters programme. The normal length of time to complete it is three semesters and a summer term or about 17 months of full-time study. It is usually a thesis degree, but the M.A. degree is also given on the basis of two-year course work plus a satisfactory performance on the Ph.D. comprehensive examinations, so that it can also be earned without a thesis.

The Ph.D. programme which was started in School year 1968-69 is the locus of the most advanced research on Philippine economy. Completion of all the requirements for the Ph.D. degree should normally take 3 years of full-time study.

The third major academic programme of the School is the training programme in development economics which is administered by the Public Affairs Programme of the School. The UP programme in Development Economics was begun in 1965 with the support of the Ford Foundation through the University of Wisconsin. This is a certificate programme designed to equip mid-career government officials with skills in policy-oriented research and government planning in order to strengthen the planning staffs of key government agencies. Participation requires nomination by government offices that pay the tuition and salaries of their nominees during their full-time attendance for one academic year.

In its eleventh session, there were 47 participants from 12 government agencies. Since the inception of the programme in 1965, 287 participants from 80 government agencies have been trained under this programme as of School year 1974-75. Enrolment in the UP PDE increased from an average of 30 to 45. For the past two years, about two-thirds of the programme slots have been reserved for NEDA participants who are usually honour graduates from top universities and colleges in the country. The UP PDE screens and provides pre-service training to NEDA recruits. However, there is an increasing demand by other government agencies for the training of their personnel in the operational technique of development planning.

Research in the UP School of Economics

The faculty, visiting professors, graduate and undergraduate students, and trainees have been active in both problem—and

policy-oriented research. The School has a somewhat diffused research programme because of multiple sources of funds from the University and outside sources. Private business has not played a role in the direction of research.

The quantity of research of the School is strongly determined by the availability of Ph.D.'s. Research topics have been subject to faculty interest and assent.

To increase research output and gear it to national priorities, there is need to increase professional staff, provide funds from public sources and increase time for more focused research efforts. Only in this way will the energies and capacities of the School be captured for research work on national development.

Despite the substantial research output of the School, there is some problem on the visibility of these research efforts locally and abroad. There is, therefore, need for greater dissemination of research results to the national and international community through seminars involving people in government and other educational institutions and through the publication of researches.

Lately, the School has shifted to team effort research which calls for integrated and coordinated interaction not only among economists but also other specialists from other fields.

Jointly with the College of Business Administration, the School publishes *The Philippine Review of Business and Economics* semi-annually: This review serves as a vehicle for the publication of the research works of these two units of the university and other materials relating to Philippine business and economic conditions.

Extension services

The UPSE has an impressive record of contributions to the economic profession in terms of lectures, participation in seminars, workshops and international conferences, and consultations both in government and private sectors of the economy. Faculty members engage in various activities besides the traditional preservation and transmission of knowledge. These include performing administrative jobs in the School, advising students, supervising thesis writing, undertaking research projects and consulting with agencies of the government and international bodies. The varied involvement of the faculty in activities outside the School is an indication of their acceptance of public service as one of their responsibilities in addition to academic instruction and research.

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Jointly with the College of Business Administration, the School publishes *The Philippine Review of Business and Economics* semi-annually: This review serves as a vehicle for the publication of the research works of these two units of the university and other materials relating to Philippine business and economic conditions.

Extension services

The UPSE has an impressive record of contributions to the economic profession in terms of lectures, participation in seminars, workshops and international conferences, and consultations both in government and private sectors of the economy. Faculty members engage in various activities besides the traditional preservation and transmission of knowledge. These include performing administrative jobs in the School, advising students, supervising thesis writing, undertaking research projects and consulting with agencies of the government and international bodies. The varied involvement of the faculty in activities outside the School is an indication of their acceptance of public service as one of their responsibilities in addition to academic instruction and research.

Public affairs activities of the UPSE were formalized with the creation of the Public Affairs Programme (PAP), the main function of which is to maintain a continuing interaction between government officials and the academic researchers. Besides the Programme in Development Economics which was previously discussed in this paper, the PAP created the Visiting Senior Fellows Programme. This was designed to enable government officials to analyse a particular aspect of public policy, to bring the research programme into direct contact with realities in the government, and allow officials to acquire new techniques of economic and statistical analysis.

UPSE faculty often initiate community projects. They also serve on various committees and commissions such as the Performance Evaluation Committee, Coordinating Committee of the Presidential Commission to Survey Philippine Education, the Committee on Study and Training in the United States under the Fulbright-Hays Programme, the Asian Study Committee on Trade and Cooperation, the Bureau of Census and Statistics, etc. They have served as lecturers on some aspects of economics in other units of the University, other agencies of the government, and private firms and institutions.

The research activities of the UPSE have gained international recognition so that the faculty have often been invited to present papers and attend scholarly conferences abroad. The international involvement of the UPSE includes membership in the Asian Association of Development Research and Training Institutes (now ADIPA) work with the Indonesian Planning Board, International Labour Organization, the United Nations, etc.

The UPSE conducts a series of seminars for the dissemination of research results by faculty, fellows and graduate students. The target audience of these seminars is the professional economic community in the Greater Manila area. They provide an effective vehicle for increasing communication between the government and the School.

TABLE 11. *Public Service and Community Participation*
School of Economics
1970-74

	<i>Consultancies</i>	<i>Public Service</i>	<i>Lectures</i>
1970-71	10	3	32
1971-72	20	12	26
1972-73	10	17	7
1973-74	6	42	21

tions. It can also help develop a sense of community, communication and common purpose among the personnel. Thus, adequate and appropriate space and facilities for faculty, students, supporting staff and the publics of the School should be a necessary component of its programme to increase its contribution to national development.

However, space seems to be one of the pressing problems of the School. With the expansion of its programmes and activities and the consequent increase in the number of faculty, students, staff, classrooms and offices, the inadequacy of space is most felt.

The library

The School of Economics library completed its tenth year of existence in 1975. During the decade it had grown in quality and quantity of its collection, rate of use of its resources, services rendered and number of personnel. The healthy growth of this vital unit of the School is in response to an increasing demand from its clientele—students, faculty, visiting researchers from abroad, other university personnel, alumni, and outsiders. The Library has developed into a scholarly facility and national resource with one of the stronger collections in the field of economics in the Philippines and in Asia. Its present level of development was attained through the support of the University administration and outsiders especially the Rockefeller Foundation, the Ford Foundation and individual donors.

The big boost in the Filipiniana collection was attributed to the organized field visits to government agencies and private research institution to solicit documents and other publications.

Utilization of the library collections in 1975 reached 106,068 units of service registering an increase of 24.13 per cent compared

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All these extension and community services as reflected in Table 11, attest to the established professional reputation and record of the School and its faculty.

Physical facilities

Physical facilities can contribute substantially to the achievement of organizational goals especially in research and teaching institu-

well be shared by other countries of South East Asia that stand to profit by the UPSE's graduate programmes in terms of reduced cost of training and more meaningful course work than they could get at most institutions abroad.

The UPSE itself could hire some of its graduates to reinforce the needed manpower for its expanded programmes in teaching, research and consultation. There will also be a substantial absorption of Ph.D. and M.A. graduates to strengthen the teaching of economics in other colleges and universities in the Philippines especially in some regional institutions which should provide the necessary reinforcement to the regional development thrust of the government.

In the light of the factors cited above, the academic programmes of the School will be in even greater demand than they have been in the past. The UPSE pool of experts will continue to be called upon to develop needed manpower, provide research studies and render consultation services that will contribute significantly to the identification and solution of economic problems and to better economic planning and policy-making.

In the next decade, therefore, it is envisioned that the UPSE will be called upon to make even more substantial contributions to the socio-economic progress of our country as the Philippines addresses itself more extensively and intensively to national development.

to the previous year. Contained in this is a marked increase in the use of the Filipiniana collection, a probable indication of the development and expansion of the academic and research programme.

In line with the Library's continuing commitment to build a collection responsive to the needs of its clientele, it has procured books on subjects of current interest, namely, economics of health and nutrition, population and environment, energy resources, and pollution problems.

To cope with the demands for increased library services, the Library staff has increased from the original four full-time staff members and five student assistants in 1966, to ten full-time staff members in 1975 as follows: four professionals with two working half-time each, five sub-professionals and two utilitymen.

Prospects for the UPSE¹

The UPSE has an impressive record of contributions to the economic profession of the Philippines in academic instruction, research output, training of mid-career bureaucrats, productive scholarship, and hours of extension and community service, all geared toward the national development efforts. This creditable performance has created a strong demand for its graduates.

Population growth, demand for more and more consumer products, expansion of business enterprises, increasing complexity of agro-industrialization of our nation's economy and the new regional emphasis in planning and implementation, have all combined to create a greater need for trained economists.

In government, the largest markets for its graduates would be the National Economic and Development Authority (NEDA, the country's principal development planning agency), the Board of Industries, Central Bank of the Philippines and the Development Academy of the Philippines.

Both government and private sectors will have more need for trained economists who are thoroughly grounded in scientific methods of analyzing business trends, forecasting sales and planning, purchasing and production operations. This need could very

¹The greater portion of this topic was extracted from the Study of the Programmes and Staffing of the School of Economics conducted by Professor Stephen Lewis, Jr. in 1973.

For classrooms, its first enrolment of 22 students used rooms of a private residence recently acquired by the University and located in the Ermita area of Manila.

At that time, the need for engineers was already being felt by the country but despite this and the free tuition, enrolment was minimal. This may have been largely because of the greater popularity of "status" courses like medicine and law. Another reason for this could have been the rather long period of study required for the course. In the light of the foregoing reasons the two-year preparatory engineering course was made optional for high school graduates with credits in solid geometry. The bachelor of science in civil engineering course was shortened to four years and a year of graduate studies led to a master of science in civil engineering degree.

Faculty and facilities

An engineering school can only be as good as its faculty and facilities with students playing an indirect role. In this regard, the UP College of Engineering in general and the civil engineering department in particular, have consistently striven towards offering the best civil engineering education through its faculty and facilities.

Faculty. Most of the early faculty members, aside from the Americans, were government men like the City Engineer of Manila and the Assistant Engineer of the Bureau of Public Works. Later on several faculty members were given fellowships for specialized graduate studies at foreign universities. Today, the civil engineering faculty has the highest percentage composition of professors among the other departments in the College: chemical, electrical, engineering services, geodetic, industrial, mechanical, meteorological and mining engineering.

The department presently has seven professors, two professorial lecturers, one associate professor, and instructors in its teaching programme for an average enrolment of 115 students. In terms of educational background, the faculty has three with doctoral degrees, five with master's degrees, and only two with undergraduate degrees.

An important aspect of the faculty that has enhanced the quality of instruction is the fact that most of the faculty members are either concurrently engaged or have had engineering practice—people who

7 The Civil Engineering Programme of the University of the Philippines

Civil engineering is regarded as having the widest scope of work among the technological professions that concern systems of constructed structures. It is in fact the oldest branch of engineering and also one of the most significant in human existence specially for developing countries.

Civil engineers are actively involved in the conceptualization, planning, design, construction and operation of systems of facilities needed for the progressive well-being and use of humanity. Consequently, they are employed by a large number of industries and by a wide variety of government agencies.

For a developing country like the Philippines, a major portion of economic growth would be accounted for by the construction of infrastructure facilities as well as commercial, industrial and even residential structures in which civil engineers play a significant role. Cognizant of the need to develop Filipino civil engineers to fulfill their important role in the economy, the University of the Philippines was one of the earliest in the country to offer and has consistently endeavoured to give the best education in civil engineering.

Civil engineering education

The College of Engineering of the University of the Philippines was opened on 13 June 1910, three years after the University of Santo Tomas offered the first civil engineering course in the Philippines. With W.F. Colhert as the first dean, it was the fifth college to be opened following the colleges of Fine Arts, Agriculture Veterinary Science, and Medicine. The curriculum tentatively adopted then was a four-year course leading to the degree of Bachelor of Science with the additional degree of Civil Engineer upon completion of an extra academic year of study. Before the year was over however, a two-year preparatory engineering course was required for entry into the regular four-year engineering course.

neither is there any point in waiting for a single central theme to develop. Every college must determine its own objectives, within the context of its environmental conditions, job market, faculty capabilities and student composition.

The curriculum programme for civil engineering has followed some period of experimentation and evaluation in its development. For its initial course offering in 1910, the College of Engineering gave a four-year bachelor of science in engineering and a civil engineering degree after one year of study. Before the end of the first school year, the civil engineering curriculum was revised. A two-year preparatory engineering course was required for entrance to the College of Engineering.

Further development

For school year 1915-16, the Board of Regents of the University, cognizant of the pressing need for engineers in the government, made the two-year preparatory engineering course optional to attract more students to the course since it was observed that despite free tuition, enrolment was minimal. During the same year, a master of science in civil engineering degree, which required one year of graduate studies, was introduced.

Summer surveying for civil engineering was abolished in 1922-23. Starting in 1926-27, an entrance examination in mathematics and physics was required for admittance to the College both to control the quality and to regulate the number of students enrolling in engineering. This was instituted due to the observation that prior to 1926, about 12 per cent of the students graduate in four years and only about 25 per cent were expected to graduate at all. Entrance examinations were abolished in 1960-61 in lieu of grade requirements when the University established the University College programme. This has contributed in a large measure to the upgrading of student quality through the later years.

In 1951, soil mechanics was introduced and taught by Professor Leo Ritter of the University of Florida under the Philippine-United States of America Friendship Programme. An important subject for engineering in the Philippine situation, the subject (now called Soils Engineering) to this day remains a part of the curriculum.

A five-year curricula for engineering courses was introduced by the University in 1953. Despite this and the fact that other schools were still offering four-year engineering courses, enrolment in the

have had contact with "real" engineering problems. Leading the faculty in this area is the present Dean of the College himself, Alfredo L. Juinio, who is concurrently the Administrator of the National Irrigation Administration and Secretary of the Department of Public Works, Transportation and Communications. He is also a consultant of a major Philippine engineering firm, DCCD Engineering Corporation—of which he was formerly the Chairman of the Board and President.

It is felt that actual engineering practice not only improves the communicative skills of faculty members but it also gives them a fuller or "total" comprehension of engineering problems—its economic structure and utility, its sociological impact, and its technical details.

Facilities. Good laboratories are needed for the performance of laboratory work that will expose students to methods and techniques used in scientific engineering investigation. Through these activities, students meet the need for engineering judgment, teamwork and careful planning as well as develop their abilities to observe and decide based on independent and creative thought.

As early as 1941, the UP College of Engineering was already the best equipped engineering school in the country with laboratories for the following: cement testing, hydraulic, steam, gas engine, fuel and lubricants testing, metallography, direct and alternating current, fire assay, ore dressing and hydrometallurgy. Aside from these were also the wood, forge and machine shops for the fabrication and erection of experimental apparatus for both laboratory work and experimental research.

Through a continuous programme of improvement and with the generous aid of foundations, alumni and foreign governments as well as the University's own funds, the College has been able to update its laboratories and equipment to the latest state of the art. Presently, students make full use of the materials in the testing, soil mechanics, and hydraulics laboratories of the College which are reputed to be among the best in the whole of Southeast Asia today.

Curriculum and teaching programme

Curriculum development particularly in engineering is a subject of controversy where great differences in opinion occur in almost any group. The civil engineering curriculum is no exception but

the University of the Philippines is offering subjects in seismology and earthquake engineering which are considered important subjects considering the fact that the Philippine lies on the Pacific Ocean Earthquake Belt.

The civil engineering curriculum follows closely the highly American style of engineering education causing others to question the appropriateness of the American type of engineering education to a developing country like the Philippines. In construction methods, for example, Filipino educators should emphasize labour-intensive methods.

Other certificate courses such as Water Resource Development of six to twelve months duration are also offered by the College on specialized areas of civil engineering mostly for government personnel.

The only continuing education programme in Civil Engineering of the College is its two-year master's programme which is being geared primarily towards the improvement and upgrading of civil engineering education in the Philippines. There are now plans of establishing a doctoral programme as a further development of the education programme.

On textbook development, the department has started the writing of a textbook on matrix structural analysis and a book entitled "Introduction to Structural Dynamics."

Students and alumni

Viewed from the perspective of education as a process, student enrolment and graduates are the basic inputs and outputs respectively of an educational institution like the University of the Philippines. Hence, in the evaluation of the performance of the University and in particular the Department of Civil Engineering in terms of its key functions, teaching and research, an analysis of student enrolment and the alumni would provide valuable insights on trends in student population and composition, absorption into the economy and to a certain extent, the quality of education.

Student profile

Starting with 22 students, population grew over the student years and up to the early thirties civil engineering students made up the lion's share of student enrolment at the College. Among the significant roadmarks in the period up to the early seventies are:

College continued to increase for several years after the institution of the five-year period of study.

With the installation of the University's Computer facilities in the early 1970s at the UP Alumni Engineers Centre, the use of applied computer science was introduced to the various civil engineering subjects and more particularly to design and special problem solving.

Current teaching programme

The University of the Philippines has a long standing tradition of developing leaders in the nation's various fields of endeavour and thereby has consistently maintained itself at the apex of the nation's educational system. This tradition and institutional objective is also reflected in the present curriculum of the civil engineering department of the College of Engineering.

The present curriculum is intended to prepare the student for leadership in the developmental roles the UP civil engineering graduate has in the Philippines. Designed to give the graduate of the College a balanced education, the curriculum provides training in the social sciences and the humanities with a solid foundation on the fundamentals of civil engineering for technical excellence.

Four major areas of specialization have been identified by the department for civil engineering education and they are:

(1) *Hydraulic engineering*—regarding fluids, their control and of the systems needed to store and transport fluids.

(2) *Sanitary engineering*—on the development and maintenance of a safe and healthy environment for human beings through the provision of safe and adequate water supply and air for human and industrial consumption and by providing means for the safe disposal of wastes and pollutants arising from these activities.

(3) *Structural engineering*—dealing with bridges, buildings, dams, tunnels, and the like needed to provide space for human occupancy, for retaining and storing of materials, and, for passage of people and vehicles.

(4) *Transportation engineering*—concerned with the complex, interacting systems of highways, waterways, pipelines and others needed to transport people, materials, produce, equipment, etc.; the means of controlling these systems; and the planning, design, construction, and operation of these transportation networks.

As of school year 1975-76, only the College of Engineering of

TABLE 12. Total College Enrolment—Bachelor of Science
in Civil Engineering 1971-72

Institution	Enrolment	Graduates	Percentage Graduates to Enrolment
Government	226	48	21.2
Private	17,112	1,079	6.3
University of the Philippines	123	22	17.9

SOURCES: *Educational Statistics School Year 1959-72*, and the Records of the UP University Registrar.

small minority (0.7 per cent) of all the civil engineering students in both government and private institutions. On the other hand, civil engineering graduates of UP represent a much bigger percentage (1.95 per cent) of the graduates in both government and private institutions. A fact that is reflective of the quality of students and the effectiveness of the teaching function.

Viewed from the perspective of total collegiate enrolment, UP's student enrolment of civil engineers constitute a much smaller percentage (0.014 per cent) of the total Philippine collegiate enrolment, while total enrolment in civil engineering for both private and government institutions comes to 1.95 per cent of total collegiate enrolment in the Philippines.

The foregoing facts reflect the low production of technological professionals relative to the demands of industrialization in a developing economy. But despite their small number, UP civil engineers have been able to give and are very capable of making an important contribution to the economic development of the country as will be discussed in a later section of this paper.

The civil engineering alumni

The first graduates of the College were immediately absorbed into the government service. As enrolment increased, more and more graduates joined the ranks of the alumni that by school year 1976-77 there are about 1,375 graduates of Civil Engineering from the University since 1910. Largely because of the versatility of their profession and the quality of their education, the graduates have been absorbed widely and are now employed by a wide variety of private firms as well as government agencies.

1910—The College of Engineering was founded with an initial enrolment of 22 students.

1925—Tuition fees (P 25) were charged for first time but despite this enrolment increased to 506.

1937—The first woman student, Miss Lydia Monzon, enrolled in civil engineering.

1954—Enrolment exceeded 1,000 for the first time of which 68 were women enrolled in chemical engineering which to date remains as the most popular course of women students in the College.

1958—Peak enrolment of 1,383 was reached.

1960—Enrolment dropped to 884 and continued to decrease until 1962 on account of the University College programme wherein undergraduate students were required to enroll for their first two years.

In the later years, particularly during the past five years, there is a moderate downward trend in the number of students enrolled in civil engineering and consequently their share of total enrolment in the College went down from 17.3 per cent in 1971-72 to 11.3 per cent in 1975-76. The most popular course is now Industrial Engineering which accounted for 28 per cent of student enrolment in 1975-76 although barely four years before that honour was held by the Mechanical Engineering course.

Student population—comparative analysis

The pattern of enrolment and graduates has been relatively stable during the past five years with enrolment maintaining an average of 110 students and adding an average of 22 graduates to the folds of the alunini each year.

Another characteristics of the pattern of enrolment and graduates in the University during these years is the relatively high level of the ratio of graduates to enrolment which has averaged 21.5 per cent. Compared to total B.S., Civil Engineering figures for the whole Philippines' in school year 1971-72 (latest available data), this average is lower than that for all government institutions but still about three times higher than the figure for all private institutions as shown in Table 12.

From Table 12 it will also be observed that civil engineering students of the University of the Philippines constitute a very

role encompasses a broad spectrum from bureaucracy to politics. On the political side, a number have been elected to the Senate and Congress while others were elected as constitutional delegates. About four graduates have been elected as either mayors or city councillors.

On the other hand, a larger number have served or are presently working as high-ranking civil servants in the government bureaucracy. The range of government agencies wherein past and present key officials are graduates of Civil Engineering from the University of the Philippines are listed below:

1. Department of Public Works, Transportation and Communications. Almost all past and present Secretaries (Ministers) of the Department are graduates while other graduates have been or are directors and heads of important bureaus such as Coast and Geodetic Surveys; Ports and Harbors; and the Programme Planning and Development Office.
2. Department of Public Highways. Several graduates, aside from those in the head office, are or were District and City Engineers.
3. National Power Corporation.
4. Metropolitan Waterworks and Sewerage System, and of the defunct National Waterworks and Sewerage Administration.
5. Local Water Utilities Administration.
6. National Irrigation Administration.
7. Water Resources Council.
8. Bureau of Health and Sanitation, Department of Health.
9. Bureau of Barangay Roads, Department of Local Government and Community Development.
10. National Water and Air Pollution Control Commission.
11. Philippine National Railways.
12. National Economic and Development Authority. One of the deputy directors is a graduate.
13. National Science Development Board.
14. Laguna Lake Development Authority.
15. Civil Defence Administration.
16. Armed Forces of the Philippines.
17. Government Service Insurance System.

E. International agencies. In the international field, aside from

Given the large number of alumni, it would be difficult to enumerate and categorize them according to their role in Philippine society. A more possible course would be to list the range of occupational status or position of the more prominent graduates and group them by major sectors of society such as education, construction, industry in general, etc. Such an approach would provide some measure of the significance of the role of UP civil engineers in the Philippine socio-economic milieu.

In line with the foregoing approach, the following list was derived showing the prominence of the graduates in Philippine society:

A. Construction. A large number of the graduates are either owners or are principal officers (as president, vice-president, chief engineer, etc.) of most of the major construction group in the Philippines such as Hydro Resources Contractors Corp., Construction Development of the Philippines, Atlantic Gulf and Pacific Company of Manila, Inc., D.M. Consunji Inc., and Engineering Equipment, Inc. Several of them are also the principal consultants of the bigger consulting firms in the country like DCCD Engineering Corporation and Technosphere Consultants Group, Inc.

B. Industry. Many of the UP's graduates in civil engineering have been or presently are at the helm of major corporations: a graduate is now a senior vice-president of the Manila Electric Co. and another of the Insular Life Assurance Co. Ltd. Other graduates hold key executive positions in big firms like Philippine Commercial and Industrial Bank, A Soriano Corporation, Canluhang Sugar Estate, Western Steel, Inc., Pilipinas Shell Petroleum Corporation, and the Private Development Corporation of the Philippines.

C. Education. In the field of education, UP civil engineering graduates have distinguished themselves as among the foremost in civil engineering education. Many have served or are presently serving as deans of engineering colleges in such highly-rated universities as the University of the Philippines, Mindanao State University, University of the East, San Carlos University, and even of the UP School of Fine Arts and Architecture. A graduate is now president of the Western Institute of Technology in Iloilo while many have been or are instructors and professors in engineering colleges, a graduate school of business administration and an institute of environmental planning.

D. Government. It is in the government sector that UP's civil engineering graduates have contributed their greatest share. Their

tion material and they are:

(1) *An Approach to Computer-Aided Instruction Using in Interpretive Programming System.* This is among the first researches on computer applications in engineering. Published in the July 1972 issue of the UP Engineering Research Journal.

(2) *Introduction to Structural Dynamics*—A text-book still in the process of being written.

(3) *Matrix Structural Analysis*—A text book still in the process of being written. The two text books are part of the effort of the College of Engineering aimed at improving the current situation of almost total dependence on Western and other foreign text books.

Other researches made during the five-year period cover a wide range of civil engineering problems from hydraulic and pollution, transportation control to soil mechanics.

New projects and programmes

Cognizant of the need for researches in engineering in general and in civil engineering in particular, the University has made plans for strengthening current projects and instituting new projects and programmes in support of its teaching function and more important, of the nation's thrust towards socio-economic development. The new projects and programmes in the field of civil engineering planned for the future are:

(1) *Fire Technology Centre*—A New research programme aimed at developing not only fire-fighting capabilities but also fire prevention.

(2) *National Engineering Centre*—This is an ambitious project that seeks to integrate the teaching, research and extension service capabilities that will pioneer in the technology development efforts of the Philippines and of Asia. The major component of the project is staff development, estimated to cost ₱1.5 million to be financed mainly by the United Nations Development Programme.

(3) *Strengthened Building Research Centre*—A joint effort of the Colleges of Engineering and Architecture and the Institute of Planning, this project will be strengthened to provide more

the graduates who have worked with major international firms, others have held or are presently holding important positions in international agencies like the International Atomic Energy Commission in Vienna, the International Bank for Reconstruction and Development, and the Asian Development Bank. Another graduate is an internationally known human settlements consultant.

ROLE IN THE ECONOMY

The Civil Engineering Programme of the University of the Philippines plays a very significant role in the nation's economy. It provides vital support to infrastructure programme of the government as well as in the design, planning, construction and operation of facilities for industrial, commercial and residential purposes taking into account Philippine conditions. Attainment of this important role is done in three principal ways: (1) researches and studies; (2) consultancy and extension services; and (3) absorption of its graduates into the economy.

Researches and studies

Aside from the teaching function, the Department is also actively involved in the scientific and critical investigation of and experimentation with hypothetical propositions regarding problems and phenomena that are within the domain of civil engineering. Greater interest, however, is in the use of such newly-discovered knowledge in practical applications that help resolve some of the major problems of society (e.g. poverty and pollution) as will be observed from the list of researches done by the department during the last five years.

Researches completed and in progress

Research work is done by the small twelve-member faculty staff and in most cases, each research is usually the work of just one person.

The bulk of the researches done during the five-year period from 1972 to 76 has been concentrated in the field of building design and construction. Seven research projects were made in this area and two of these are still in progress.

Three studies fall under the category for textbook and instruc-

National Hydraulic Research Centre

The National Hydraulic Research Centre, established in 1973, is a unit of the UP College of Engineering but whose facilities are managed by the UP Engineering Research and Development Foundation, Inc. The Centre is engaged principally in providing technical assistance through research in fluids mechanics, hydraulics, water resources and other related fields. Its experimental facilities are also made available for the academic programme particularly for instructional purposes, graduate research and faculty research in fluid mechanics and hydraulic engineering.

The Centre is also the national repository and dissemination agency for all available data, information and literature on water resources and other related information on the Philippines. All documents made available to the public are published in the quarterly *Philippine Water Resources Abstracts*.

Initial funding for the Centre was provided by the Department of Public Works, Transportation and Communications, the National Power Corporation, National Irrigation Administration, and the Metropolitan Waterworks and Sewerage System, while the existing facilities of the hydraulic laboratory of the UP College of Engineering constituted the initial facilities of Centre. Operations of the Centre are supported entirely by sponsored projects as well as from the earnings of its trust funds.

Building research centre

Initiated by the Board of Regents on 7 December 1970 as a Building Research Centre Committee, the Centre has since made several studies on the problems of building in the Philippines, particularly housing in all its essential aspects, including building materials, design considerations from both social and technical aspects, and construction methods.

This is a joint effort of the College of Engineering and Fine Arts and the Institute of Planning.

Presently, there is now a plan to strengthen the facilities and staff of the Building Research Centre in the new Five-Year Development Plan of the University.

UP Engineering Research and Development Foundation, Inc.

Organized by UP Alumni engineers as a non-profit organization that will serve as a private institutional medium for research and

support to the nation's infrastructure programme both in the public and private sectors with its wide spectrum of usefulness—low-cost housing, study of indigenous materials, design of buildings suitable to the Philippine setting.

(4) *Transportation Centre*—A research effort that developed out of the oil crises, the proposed transportation Centre will help develop approaches to cope with the problems of energy conservation and resource allocation in the transportation requirements of the Philippines.

Extension and consultancy services

The establishment of the UP Industrial Research Centre in October 1957 has marked the start of community or extension services by the UP College of Engineering through which the department of civil engineering participation. Through the years this service function of the University has been given the same level of importance attached to the teaching and research function.

Consequently, the provision of these services has been formalized through the establishment of not only one but several institutions within the University structure that make available specialized facilities and services to the community in general. Among such institutions through which the department of civil engineering participates are the following.

The University of the Philippines Industrial Research Centre

Established by the Board of Regents on 29 October 1954, the Centre provides technical and specialized services to industry, other government entities and the general public through the use of any of the laboratories of the College of Engineering. It is operated as a non-profit unit whose range of services include model testing, calibration and testing of various instruments testing of construction materials and products, process development, metallurgical analyses to the design and testing of water supply systems.

Although it initiates numerous developments of process and devices in the broad public interest, it does not and cannot operate as a general financing organization for inventions. In addition, it does not issue approval or endorsement of products or invention nor does it permit the use of its report for promotion or advertising.

prices) in 1975 to the Gross National Product, the value of goods and services produced by the economy. Representing a 3.3 per cent share of the GNP in 1975, the construction sector's share has expanded from 2.7 per cent exhibiting the highest growth rate of 31.2 per cent among GNP components.

An important trend for this sector is the development of Filipino contractors to international standards. The development of the capabilities of local contractors of a developing nation like the Philippines for international competition is a long process as it involves more than just technical expertise. That a group of Filipino engineers won out over an international group of competitors from the highly-developed nations is a good measure of the level of development of the engineering profession, particularly civil engineering in the country.

This development is best exemplified by the Hydro Resources Contractors Corporation, a one hundred per cent Filipino company, in the construction of Pantabangan Dam, appurtenant structures and irrigation service facilities. The project involved the construction of (1) an earthfill dam to create a reservoir with a storage capacity of some three billion cubic meters; (2) a 100 mega watt hydro-electric plant; and (3) associated irrigation service facilities. Hydro Resources Contractors Corporation not only submitted the lowest bid of ₱ 190 million, as against the second lowest bid of ₱ 300 million submitted by the joint venture of Hochtief AF norm. Gerb Helfman (Germany) and Compagnie Francaise d' Enterprises (France) but also completed the project seventeen months ahead of schedule.

Accomplishment of the Pantabangan Dam's construction is attributed mainly to the expertise and experience of Hydro's Filipino engineers.

development in the various fields of engineering and other related sciences. To attain this general objective, the foundation has been conceived to engage in the following activities:

- (a) Financing of research and development programme in the different fields of engineering including, the extension of grants and donations of cash, property or service to individuals or entities engaged in such activities;
- (b) Extending assistance, financial or otherwise, to those who propose to do engineering research particularly to faculty members and graduate students of the UP College of Engineering;
- (c) Establishing professorial chairs and scholarships in the various fields and disciplines of engineering;
- (d) Sponsoring and conducting workshops, seminars, conferences and other similar activities on matters of importance to engineering and to other related sciences;
- (e) Gathering, compiling, evaluating and studying statistics and other information and materials on engineering;
- (f) Disseminating to publishing research findings, studies, proceedings of workshops and other activities of the foundation; and
- (g) Aiding, assisting or coordination with any other person, corporation, organization or entity, public or private, in the pursuit or conduct of any or all of the foregoing activities.

Funds for the Foundation's activities come from donations, membership dues and other charges, contributions, loans, grants and endowments.

Absorption into the economy

Providing substantial benefits to the nation's economy, the University's Department of Civil Engineering has made its contribution primarily through its graduates, researches, and extension services. The quality of its contribution may be gauged by its impact of its outputs on the Philippine economy particularly on the construction sector.

By the nature of the civil engineering profession, the Department's major impact on the economy is on the construction industry. Playing a vital role in the physical infrastructure programme, the construction sector contributed ₱1,439 million (at constant 1967

Second World War. The creation of the College of Liberal Arts (now College of Arts and Sciences) in 1910 simultaneously gave birth to the department. Initially, it was manned by American faculty and staff, sent to the country to mould the intellectual capacities of the Filipino people. American domination in the field of instruction continued for several decades. It was only after the Second World War that Filipinization was introduced. Now, the department enjoys the intellectual freedom handed down to us by pioneer American educators.

Organizational structure

Under the latest reorganization plan of the College of Arts and Sciences, approved by the Board of Regents in October 1976, the Department of Chemistry is one of seven departments of the Division of Natural Sciences and Mathematics under the College of Arts and Sciences of the University. It has a departmental faculty consisting of all regular faculty members as the structure for democratic participation in the formulation and adoption of policies at the departmental level. It is headed by a Chairman, appointed by the President, whose role shall be that of academic leader and administrator for a term of three years without prejudice to renewal of appointments. Under the present setup, the Chairman is assisted by two assistants, one for registration and the other for ongoing projects. He is further assisted by committees on various courses composed of lecturers and laboratory instructors.

Enrolment

The department's most significant contribution is its instructional programme. It offers a four-year formal instruction leading to a bachelor's degree (B.S. Chemistry) and graduate courses leading to a Master of Science degree with majors in Analytical Chemistry, Biochemistry, Physical Chemistry, Organic and Inorganic Chemistry. The Department has not offered any doctoral programme. A previous proposal was not approved due to lack of financial support and student interest. Chemistry graduates who cannot afford to take their graduate studies abroad, pursue master's or doctoral degrees offered locally in fields related to chemistry.

A former senior faculty member of the Department observed that the chemistry curriculum before was more practical in approach; now, more emphasis is made on fundamentals or basic principles.

8 The Department of Chemistry

Introduction

Chemistry is one of the more basic and challenging courses in our fields of endeavour today. It makes possible vital discoveries to improve the quality and expand the uses of natural commodities. It is an indispensable pillar in the productive activities and industrialization of the nation. Along with other natural sciences, it, therefore, serves as a vital instrument to a developing country like ours in the promotion of modern technology and the acceleration of national development.

A college course in chemistry seeks to impart to the student a thorough knowledge of the fundamental principles and the acquisition of basic laboratory skills and attitudes necessary in chemical investigation. It trains him to analyze, synthesize, prepare, and manufacture chemicals, biochemicals, and mineral products and materials. It also teaches him the nature and effect of chemicals, and how to solve problems relating to change of matter.

It is sad to note though, that very few pursue chemistry as a profession. One reason perhaps is that it is inherently a difficult and complicated course for a person who does not have an aptitude or natural inclination to solve chemical formulae. Another possible factor is that it taxes one's patience to endure the long hours of laboratory work, not to mention the number of times a student might have to repeat an experiment, if it goes wrong.

It is also significant to note that, especially in the last five years, chemistry has become female-dominated. It is interesting to note the preponderance of women over men in chemistry classes, both at the undergraduate and at the master's levels. The need for patience may partially account for this trend. It is also believed that women can stand longer the humdrum routine of the laboratory and the long, tedious hours of thesis work longer than men. Another reason given is the shift of male students to the Chemical Engineering course.

The Department of Chemistry was established long before the

In the Philippines, the chemistry graduate may be employed as quality control chemist or supervisor, production employee, salesman, laboratory analyst, technical supervisor, researcher or teacher in schools, hospitals, government agencies, laboratories, chemical and pharmaceutical establishments, and industrial and manufacturing firms at basic salaries ranging from ₱400.00 to ₱3,000.00 or more a month, depending on their qualifications and performance.

In the work situation, a chemistry graduate is expected to be able to perform any or a combination of the following jobs: perform research and developmental work in the general field of chemistry, analyse chemical and physical properties of materials, conduct chemical tests on manufactured goods, develop new processes to improve products, supervise other workers in laboratory research or industrial control activities, prepare technical reports, develop new substances, and/or examine the behaviour of solids and liquids.

Absorption of college graduates into the economy is a very competitive one. However, graduates from the University of the Philippines System enjoy the prestige of being the products of the premier institution of higher learning in the Philippines and are easily absorbed in the labour market.

A survey conducted on, 30 out of 38,1976 UPS chemistry graduates attests to the fast rate of their absorption into the economy. Six of them were employed even before graduation, 17 within one to three months after graduation, and another after having passed the chemical board test; three pursued further studies, one awaited the results of the chemical board examination and another planned to pursue further studies. Only two were not yet employed, one of them not having looked for a job because he had other sources of income.

Another survey of 273 (with employment information) out of 497 UPS alumni listed from 1957 to 1976 in the 1976 UP Chemistry Alumni Directory showed the following distribution of the graduates: 77 in private employment, 70 in teaching and academic institutions, 55 are abroad, 43 in research work, 20 in government offices and eight are pursuing further studies or training.

The results of the national board examinations for chemists further attest to the commendable performances of chemistry graduates from the UPS. The Professional Regulation Commission gives two examinations a year, one in May and the other in November or December.

Except for the May 1973 examination, there were always UPS

He expressed the need for more correlation between theory and practice in chemistry education today. He also mentioned the introduction of certain innovations in the curriculum and the need for more precise instruments in the 1960's because of the atomic theory.

From 744 students in academic year 1972, enrolment continued to increase and reached its peak in academic year 1973-74 with 1,165 students listed. This figure declined slightly to 1,156 in school year 1974-75 and further decreased to 796 in school year 1975-76.

The same trend is observable in the enrolment figures for master's degree students. From 100 registrants in 1971-72, the enrolment went down to 77 during academic year 1975-76. This may be because many students think that the undergraduate course in chemistry is terminal. Other reasons given for the declining enrolment were the departure of some professors from the Department and the previous administration of the Department.

Student profile

A chemistry college student would be a high school graduate about 16 to 17 years old. Ideally, students interested in a chemical course must have: an interest in and aptitude for mathematics and the sciences, manual dexterity to build scientific equipment, perseverance and concentration for detailed work, interest in laboratory work, a high degree of intelligence, an inquisitive mind and a good memory, and the ability, to communicate well in written or oral language.

The present and two former heads of the Department made the observation that chemistry students of the 1930s and the 1940s were more serious-minded and mature compared to their current counterparts. Another observation was that they were less exposed to distractions in their studies than the students of today.

About 90 per cent of the graduate students are part-time or working students.

Graduates

The department's output of graduates in the undergraduate courses increased gradually over five-year period. From 21 graduates in 1971-72, the figures rose gradually by year to 26, 28, 31 and finally in 1975-76 to 42.

unfortunate, however, that during the past three years, no fellowships through the Department was offered. Most of those who left for studies abroad got assistantships on their own.

Research output

The Department has produced less research than other units at the University, but the efforts made have been highly substantive and useful. In 1971-72, six out of the twelve research projects completed were published. Two appeared in the *Junior American Chemical Society*: "The Effect of Schiff's Base Formation on the Thiocyanates Catalyzed Isomerization of Cis-B-Acetyl Acrylic Acid. A Study of a Possible Mode for the Enzyme Catalyzed Cis-Trans Isomerization of Maldylacetooacetic Acid" and the "Bridged Polycyclic Compounds." Three research projects were completed the following year: An attempt to Utilize Coconut Husk in Industry, a NSRC—sponsored project started in 1969 and completed in 1972 with a budget of ₱7,000.00; Preparation and Utilization of Non-Cooking Coals for Metallurgical Purposes, jointly sponsored by the NSDB, NASSCO-MIRDC with a budget of ₱1,412,900.00 and the ₱5,800.00 project of the UP-NSRC, Esterification of Fatty Alcohols with H_3PO_4 , H_3AsO_4 and H_3BO_3 .

During the academic year 1975, only eight out of 38 faculty members had three units of research load; the following year, only two of them. Reasons given for the limited research output of the Department are overload in teaching units, length of time and extra effort in the laboratory to complete a research project, frustration over results and the priority given by the administration to teaching vis-a-vis-research activities of faculty members. Another contributing factor for the minimal research activity is the problem of funds. Only a few government agencies are willing to support such projects. Among the major research financing agents of the Department are the National Science Development Board (NSDB), National Research Council of the Philippines (NRCP), National Science Research Council (NSRC), and the Officer of Research Coordination (ORC). One research project on "Solvent Extraction of Anione," was financed by College funds in 1974-75. At times, the coverage of the project far exceeds the budget allotment so that some projects are temporarily shelved.

chemistry graduates among the top ten scorers in the board examinations. In fact, they were the topnotchers in six out of the 12 examinations given during the five-year period.

Personnel

Majority of the faculty members of the Department are its alumni. Some of them have been sent abroad on scholarship grants to pursue master's and doctoral degree studies. Western-trained, they are the epitome of true educators.

The number of faculty members varies each year. Some pursue further studies abroad either on their own or through study grants, while others go on leave or are terminated. During academic year 1972-73, there were 34 faculty members, ten of whom were Ph.D. professors, eleven M.A./M.S. degree holders and 13 were Bachelor of Science and Bachelor of Arts major in chemistry degree holders. The faculty complement increased to 38 in academic year 1974-75 and to 42, the following academic year.

Quite a number of the faculty are part-time. While the Department is now able to offer its faculty salaries competitive with other private educational colleges and universities, the fast turnover of its teaching staff is due mainly to attractive opportunities offered by industry.

During the five-year period (1971-76), the Department had only one academic non-teaching staff, a research assistant. Some faculty members have engaged the services of other research assistants for their personal projects/researches on a contractual basis.

Despite the increasing demands upon the Department, recruitment of administrative personnel was rather slow. From 1971 to 1974, the Department had only nine administrative personnel with only three more additions in the school year 1974-75.

According to its former chairman, the Department has a consortium with De La Salle College and Ateneo de Manila University so that it is able to avail itself of the services of lecturers or speakers from these educational institutions.

Staff development is a *sine qua non* especially in a society geared toward national development. For the purposes of standards of raising the teaching of chemistry education and the enhancement of the intellectual growth of the students, the Department should encourage its junior faculty to pursue graduate studies. Fellowships should be offered to one or two faculty members annually. It was

Scientific and Cultural Organization (UNESCO), and the Fund for Assistance to Private Education (FAPE). It conducts live-in seminar-workshops for chemistry teachers all over the country, usually out of town for about four days on current developments in chemistry. Schools and colleges provide their participants with stipends.

Graduates of the chemistry department join the UP Chemistry Alumni Association, whose main objective are to raise funds for the University, establish scholarships and professional chairs, assist in more effective participation by the University in developmental efforts, assist University chemistry graduates and other alumni, and secure competence in different areas of social activity outside the University.

Other organizations are the Philippine Association of Chemistry Students (mostly from the Metro Manila area), Chemical Society of the Philippines composed of professional chemistry graduates and the UP Chemical Society composed of UP students.

The Chemical Society of the Philippines organized the Amando Clemente Memorial Foundation, Inc. which was incorporated on 25 October 1971, to perpetuate the memory of one of the outstanding chemistry alumni of the UPS, the late Dr Amando Clemente. He devoted the best years of his life to the advancement of science and technology and is now regarded as the Father of Chemistry in the Philippines. He was the guiding inspiration for most of his students and was first president of the Chemical Society of the Philippines. The main objective of the Foundation is to contact chemists, friends, colleagues and former students of the late Dr Clemente to solicit their voluntary contributions for the financial assistance of deserving undergraduate students in chemistry at the UP and if funds will suffice, for the establishment of a professional chair at the University.

Physical facilities and equipment

Prior to the completion of the Chemistry Annex, the available space for the Department consisted of four lecture rooms, two store-rooms, four utility rooms, twenty-seven laboratory rooms, and fourteen advanced chemistry/research rooms. The completion of the annex during the second semester of academic year 1975-76 solved the space problem of the Department temporarily. However, with the expansion plans of the University, the space problem is expected to recur in a couple of years.

Extension services

In the University, research and community services are no longer regarded as separate or independent activities but as a teaching support. However, the activities of the Department of Chemistry are focused on academic instruction. Community and extension work are, therefore, very minimal.

Analytical services are provided by some faculty members, either in their individual capacities or through the Department, to private persons, firms or certified laboratories. Due to lack of funds, personnel and equipment, the main bulk of analytical services are passed on by the Department to the National Science Research Centre.

During the academic year 1974, only two faculty members rendered extension services. One of them conducted Oral and Testing Service at the Certified Laboratory in Quezon City from May 1974 to May 1975 and served as a panel member in a seminar conducted for 200 participants in March 1975 at the National Science Development Board (NSDB) compound. Another faculty member sat on a committee that screened the NSDB Scholars at the UP in Cebu City from 2-5 May 1974 and participated in the Summer Seminar Workshop (College Teachers Group) held from 20-31 May 1974 at the College of Medicine of the University.

The activities of the six faculty members who rendered extension services during academic year 1975 were mostly confined within the University. They served as chairman, director, or member of such committees as the Committee on Graduation and the Committee for the Improvement of Teaching in the College of Arts and Sciences, Department Course Committee for General Chemistry 1, and the Textbook Committee of the Department.

Faculty members and alumni of the Department are involved in activities of several professional organizations. The former president and one of the founders of the Organic Chemistry Teachers Association is a faculty member of the Department. Every summer this organization conducts a one-week seminar on chemistry topics of current interest for chemistry faculty of about thirty different universities and colleges. It is supported through membership fees and earnings from the laboratory manual that it publishes.

The Philippine Association of Chemistry Teachers (PACT) has a nation-wide membership and receives assistance from the National Science Development Board (NSDB), United Nations Education,

9 Summary and Conclusion

The main purpose of this study is to describe, catalogue, and analyze the contributions of the University of the Philippines to national development. The University was regarded in the study as a subsystem of the larger Philippine society which is engaged in the task of dissemination, generation, and utilization of knowledge. The evaluation of the University's contributions to the development effort was made in these three areas and more specifically in the disciplines or fields of history, economics, civil engineering, and chemistry.

Dissemination of knowledge

The University of the Philippines is, and has been, an institution of exceptional importance to the country. The vital and dynamic role it has assumed in national development has grown in urgency, scope, and depth. In the area of dissemination of knowledge through the teaching of degree and non-degree students, the UP has turned out a steady supply of high-level manpower in practically all fields to meet development needs. The graduates of the various colleges, schools, and programmes of the University, including those in the four disciplines, included in the study, are leaders in their respective fields.

The School of Economics, through its academic offerings, has provided teachers and researchers to staff the Economics faculty of colleges and universities, and economists for business and industry. Through its Programme in Development Economics, it has contributed to the upgrading of the technical competence of personnel involved in planning and economic analysis in the National Economic and Development Authority (NEDA), the planning services in government agencies, public corporations, and regional and local authorities.

Graduates of the civil engineering programme in UP have distinguished themselves in government, industry—particularly in the construction business—and in engineering education. Many of the

There is lack of glassware, chemical and other equipment in the laboratories. To remedy this situation, cooperative arrangements could probably be made with the Colleges of Agriculture and Medicine involving the use of their equipment. There is need to renovate the laboratory rooms and replace some obsolete instruments. Equipment repair and maintenance is a major problem, being so delicate and specialized that only technicians from the suppliers can perform the work. There is an urgent need for an equipment laboratory for the maintenance and repair of chemistry equipment. While this may be very expensive for a university or college to undertake, it could perhaps be done on a national level.

Prospects for the chemist

There can be no progress in modern life without the research and laboratory expertise of chemists, especially in agriculture, industry and public health. With the industrialization of the country going on at an accelerated pace, chemists will have favourable employment opportunities in the future because of the increasing demand for industrial and manufactured goods such as drugs, plastics, dyes, paints, petroleum products, metals, man-made fibers, and fertilizers. There will also be a growing need for chemistry professors in educational institutions and researchers to probe the chemical properties of substances. Thus, the horizon looms bright for chemistry graduates in the coming years.

in 1952 contributed to the growth and development of professional training and education, research and information, and consultancy services in public administration not only in the country but also in the Asian/Pacific region. The College is considered a pioneer and leader in this field of study. Graduates of this College have occupied top and middle management positions in the government bureaucracy; others have distinguished themselves as faculty members, trainers, researchers, and management consultants in academic institutions and government agencies. The two extension arms of the CPA—the Local Government Centre (LGC) and the Administrative Development Centre (ADC)—have provided executive and middle management training programme for local and national officials, respectively. These training programmes were aimed at enhancing the administrative capability of agencies both at the national and local levels for the successful and effective planning and implementation of governmental programmes and projects in particular, and in the attainment of the national development goals in general. The two centres have also provided consultancy services and have assisted in conducting management and policy studies on various aspects of governmental administration.

Generation of knowledge

In the University of the Philippines, the generation or creation of new knowledge has been clearly manifested by the quality and quantity of its research output. Faculty members, visiting professors, graduate and undergraduate students, and trainees of the University have been active in both basic and problem/policy-oriented research.

The UP School of Economics recognizes research as a major area of concern. Through its Institute of Economic Development and Research (IEDR), the energies and capabilities of its faculty, visiting professors, students and trainees have been channelled into research work on a broad range of topics of current interest such as employment, income distribution, health and nutrition, education, population, capital utilization, and others priority areas for better government planning and policy-making. In 1971-72, the School pioneered in developing an econometric macro-model for the Philippines. The School has also accumulated computer tapes containing primary survey data and computer programmes useful in economic research. The recent thrust of the School towards

top officials of government agencies involved in the construction and maintenance of public works and roads, owners and principal officers of most of the major construction groups and deans of engineering colleges in four universities are alumni of the University's civil engineering course.

UP chemistry graduates enjoy the prestige of being products of the premier institution of higher learning in the country and have therefore been absorbed at a fast rate in private employment, teaching and academic institutions, research and government offices. The high calibre of these chemistry graduates is attested by the results of the national board examinations for chemists where they usually emerge among the top ten scorers.

Although nothing meaningful can be gleaned from the enrolment or graduate statistics of the University's Department of History, much can be said about the quality of its graduates. Among them are prominent people who are heads or members of different historical councils, associations, and government agencies.

Other academic and training units of the University of the Philippines have made equally significant contributions in providing the qualitative, and, in a number of fields such as veterinary medicine, other fields in engineering and local government, quantitative as well, manpower need for the planning and implementation of development programmes and projects. The UP College of Agriculture, considered the top agricultural college in the country, has processed a pool of technically trained personnel from its more than 7,000 graduates to meet the needs of agriculture and agriculture-related industries for leaders, educators, agriculturists, researchers, technicians and farmers. The College of Veterinary Medicine has provided approximately 90 per cent of the veterinary manpower of the country who are directly involved in the livestock and poultry industry, in research and teaching in the field, and in the Bureau of Animal Industry in the Ministry of Agriculture.

The Institute of Public Health, together with the College of Medicine, serves as the power plant that generates the country's professional people who provide the leadership and occupy the key positions in the health system of the country. From its original role as a training centre for medical officers in the Philippine Health Service, the Institute has emerged as a training centre as well for public health workers in the Western Pacific region.

The establishment of the College of Public Administration (CPA)

tinctive researches. During the school year 1974-75, three research studies were completed on the following areas, namely, Filipino psychology and Philippine language, biographies of great Filipinos, and historical works on the Asian ties of the Philippines. Under the last area, five historical works were included. There are three research studies in progress investigating such areas as technical works on Philippine historiography, research on the evolution and origins of Philippine capitalism, and provincial histories. The development of indigenous curriculum materials has generally been slow. It was half a century after the founding of the University before a textbook on Philippine history was developed and written by UP professors. The book is also the first about Filipinos from the Filipino point of view. Since then, several textbooks and research papers have been written and published by faculty members from the UP Department of History particularly on the rewriting of Philippine history, search for Filipino identity and on the Asian ties of the Philippines.

Other units of the University have conducted research in various areas of human and social concern such as population and family planning, public health, nutrition, and community development; poverty, employment, economic and social accounts; public administration, urbanization, education; animal diseases and livestock support production, and the like in order to their teaching function and in response to national development goals. The success of UP College of Agriculture in its teaching function can be attributed partly to the results of research studies which provided instructional materials for teaching and training courses. The research studies at this college covered all aspects of animals, plants, and people charged with agricultural development. Its plant breeders developed the superior rice variety, C4-63, which has good eating quality and high yielding ability. In 1967, the College came up with a new open-pollinated corn variety, UPCA Var. 4, which outyielded the traditional varieties. The result of this study boosted the productivity of rice and corn industry. Research studies were also made on the diseases and culture of sugarcane, coconut, and banana, which helped increase the country's exports of these products. Investigation were also made on tenant-landlord relations which became the bases of the land reform programme of the country. Studies on the marketing of agricultural products stimulated the establishment of cooperatives, and farm manage-

team-effort research has provided interaction not only among economists, but also between economists and specialists from other disciplines. The research outputs of the UPSE (in the form of books, monographs, journal articles, and discussion papers) and its research activities have gained both national and international recognition. Its faculty members have been invited to present papers and participate in scholarly conferences here and abroad. Research results have been disseminated both to the national and international community through seminars organized by IEDR and through the publication of research results.

The bulk of the researches undertaken in the UP Civil Engineering in recent years has been concentrated in the building design and construction field. In this area, seven research projects were made (two of them are still in progress). During the last five years, greater emphasis was placed in using newly discovered knowledge for practical applications that could help resolve some of the present problems of society like poverty and pollution. Another important research interest is the production of more locally-oriented textbooks and instruction materials. Under this category, five studies were made (two of them are still in progress). Five other research studies were made covering a wide range of civil engineering problems from hydraulics and pollution, transportation control to soil mechanics. Four new research projects and programmes were planned for the future in support of the country's thrust towards socio-economic development.

The Department of Chemistry has produced less research than the other units of the University, but these studies have been highly substantial and useful. In 1971-72, six out of the twelve research projects completed were published. Over the five-year period, 1971-76, 28 research studies were completed (20 were published and eight were unpublished), 17 were in progress, and eight are still ongoing. The reasons cited for the limited research output of this Department included overload in teaching assignments, lack of funds, length of time devoted to complete a research project, frustration over results, and priority given to teaching vis-a-vis research by the administration. The expertise of faculty members in research and laboratory activities has served as a vital instrument in promoting modern technology and accelerating national development goals.

The History Department of the University has made few but dis-

come from the University faculty including the Minister of Economic Planning from the School of Economics, the Minister of Public Works from the Department of Civil Engineering of the College of Engineering and the Ministers of Finance and the Budget from the College of Business Administration. Members of the University community have also been involved in helping people at the community level to be better organized so that they could participate more meaningfully in governance and in community action.

The faculty members of the UP School of Economics continue to be called upon to develop needed manpower and expertise in development planning and economics, to conduct research studies, and to render consultation and other community services that contribute significantly to the identification and solution of economic problems and to a more rational and realistic economic planning and policy-making. The pivotal role of the School has become more critical as the country continues to address itself squarely to the forces and challenges of change and to forge ahead in its development efforts.

The faculty members in the Department of Civil Engineering are either currently engaged in or have had engineering practice not only to acquire a broader comprehension of engineering problems but also to contribute more directly to solving engineering problems. The Materials Testing Laboratory and the Soil Mechanics Laboratory of this Department are two examples of how the knowledge and expertise of its faculty have been utilized. A regular supply of materials, such as steel bars and concrete pipes, are tested in the Materials Testing Laboratory for comprehensive strength to check whether these are in accordance with the designer's specifications.

The most significant contribution that the faculty members of the Department of Chemistry have made in the utilization of knowledge and expertise is the development and upgrading of technical manpower resources needed in the production and industrialization activities of the country. The faculty, alumni, and students of this Department have worked for the upliftment of the teaching standards of chemistry education and the enhancement of the intellectual growth of chemistry students in the country. Seminar-workshops conducted by the Department have provided opportunities for chemistry teachers all over the country to keep abreast of the latest developments in the field of chemistry.

In the broader context of national development, the faculty -

ment studies pointed out financing problems which resulted to the establishment of rural banks and credit institutes.

The Institute of Public Health and the College of Medicine have conducted basic and applied research studies in nutrition, environmental sanitation, patterns of health care, communicable disease control, delivery system of health services and on infection and other diseases. These research studies have contributed new knowledge and gave direction to the improvement of the general health condition of the people.

The College of Public Administration conducts a continuing programme of research, both basic and applied, and publication to help advance knowledge in public administration and to improve governmental management in the country. Among the notable researches which have been completed recently were studies on the causes and consequences of graft and corruption, the political/administrative aspects of regionalization in the country, citizen participation in governance and development, community politics in a suburban setting, and various aspects of local government administration. The research studies of the College are published in the form of monographs, occasional papers, and periodical articles in the *Philippine Journal of Public Administration*, *Local Governmental Bulletin*, and other professional social science journals.

The College of Veterinary Medicine has been one of the most productive units of the University in terms of research output. The areas of research inquiry in this College included the following: (1) animal diseases and livestock production, (2) developmental research on biologics used for disease prevention and control, (3) evaluation of new drugs, (4) studies on epidemiology of prevalent animal diseases and zoonoses, and (5) food hygiene practices and zoonoses control.

Utilization of knowledge

Faculty and staff members of the University have utilized their knowledge and expertise gained through previous education and training and through research and/or the practice of their professions to help solve problems in the University, in government, both at the national and local level, in business and industry, and in the community. University personnel have served as consultants and even as decision-makers in executive positions in government and business. Several ministers and deputy ministers in the government

fund, the Greater Manila Terminal Food Market, the Philippine seed certification programme, and the Land Reform programme. As regards to their services to private agricultural entrepreneurs, the College could proudly say that almost all viable agricultural enterprises are being served by their technical specialists.

Since the health needs of the country are real, urgent, and immediate and call for solutions even under the hard realities of the present, the faculty members of the Institute of Public Health and the College of Medicine have continued to provide assistance in improving the health conditions in the country. Their knowledge and expertise have been tapped to explore new approaches and new methods of bringing the benefits of public health care, medical care, and other health services to the broad masses of the people. Their technical skills and administrative capabilities have lent support to projects on how the people in the community can cooperate with the health agencies so that they can receive the maximum benefits within the limited resources that can be channeled to them. They have also been asked to prepare health programmes and projects, train technocrats and implementors of health plans, and enlighten people on matters of preventive medicine and public health. Their expertise and knowledge have been used to predict the health needs of the future; they serve as pace-setters or take the lead in introducing innovations in the development of a national health plan.

As one of the few academic institutions in the country engaged in training activities for governmental administrators, the faculty and staff of the College of Public Administration have been asked to extend their expertise and knowledge on various aspects of government administration and management. Programmes and projects on management improvement and on reorganization have been directly or indirectly influenced by the College such as the regionalization scheme, the Metro Manila Commission-type approach, the Integrated Area Development (IAD) strategy, the reorganization plan of the government, the restructuring of local governments, performance evaluation programme, and the like. Faculty members of the College have been asked to help in designing training courses and programmes and in the development of teaching and training materials. Their expertise has been used in formulating plans and programmes in such areas as fiscal administration, population and family planning, health service delivery

members of the History Department of the University have played a more important role in the inculcation of nationalistic values in the minds of its students. Towards this end, the Department has made two significant contributions, the search for a truly Filipino identity and in the rewriting of history from the Filipino point of view. As a field of study, history has shifted from a mere recording of past events and actions towards a more analytical history of ideas and intellectual movements. Since the country faces three major contemporary concerns: namely, national identity, national unity, and national self-determination, the faculty of the Department could contribute further in their study and reinterpretation of the past toward the attainment of development goals.

In response to the tremendous demands brought about by the developmental functions of the Government, the faculty members of the other units of the University have continued to utilize their knowledge, expertise, and administrative capabilities to support the promotion of programmes and services provided by national and local agencies. The faculty members of the College of Agriculture, for example, have embarked on a project to spread agricultural information through the use of mass media. To transform knowledge into specific programmes, the College offers a short-term practical courses during summer to farmers and homemakers in such areas as poultry raising, swine production, control of poultry disease, mushroom culture, artificial insemination, and others. It continues to provide assistance to different agricultural development programmes and projects of the government and those initiated even by private organizations. It also conducts college-wide exhibits and farmers' field day to demonstrate to the general public the importance of the agricultural thrust of the Government in the attainment of rural development objectives.

Another aspect of the College of Agriculture's involvement in utilizing faculty members' knowledge and skills is its active participation in national planning for agriculture. In recent years, all national committees of the central government dealing in agriculture have members from the UPCA faculty. The services of the faculty members have been made available not only among the agencies of the government but also to the private sector engaged in agriculture, including agri-business and industry. Examples of national programmes in which the UPCA faculty have participated are the rice and corn self-sufficiency programme, the agricultural guarantee loan

strengthened its regional units in different parts of the country to respond to regional requirements. The regional units may evolve into an autonomous university within the UP system depending on the magnitude of funding support which may become available.

Moreover, the University will attempt to provide the poor, the minority groups, and other disadvantaged members of Philippine society with increasing opportunities for admission in UP and for advancement as direct beneficiaries of its programmes and activities or as members of the UP community. Studies have shown the predominantly high-income background of the majority of students admitted into the university during the last two decades. This fact, plus the growing recognition that the UP, as an institution subsidized by the people's taxes, should provide equal opportunities for young men and women from all income groups to obtain a university education, the national emphasis on the goal of social justice have led to the adoption of this new commitment.

The University has also taken steps to enable it to extend its beneficial influence to other educational institutions in the country. Through various consortium arrangements, the University has shared its pool of human and physical resources with other universities and colleges in the development of joint academic, research and extension programmes.

Above all, the University will continue to assume the role of an effective agent of reform and a constructive social critic. When the incumbent UP President was sworn into office in January 1975, the President of the Republic of the Philippines defined this role of the University along the line by making the following observation:

"If the University is only going to reflect current realities, where will the critical thought—the transforming criticism of society—come from? There has to be a zone of sanity, of clear uncluttered thought, so that the turmoils can be seen at a distance and hopefully provide an approach to accommodate them or put them at the service of the society. This the University is ideally suited to do."

In the performance of this role, the University must provide and maintain a climate favourable for national survival and progress by serving as a market place for ideas and a meeting ground for different opinions. In the process of discussion and debate, ideas supported by scholarly research and analysis may be compared, evaluated and applied toward the national interests.

system, regionalization, graft and corruption control measures, and civil service reforms.

The College of Veterinary Medicine, in collaboration with the National Food and Agricultural Council, conducts a continuing education programme not only for its alumni but also graduates of other veterinary schools in the country as part of transforming their knowledge and expertise in solving some of the problems of the country. Collaborative efforts have also been made with the Bureau of Animal Industry and other government agencies in the implementation of the country's livestock and poultry production programme and animal disease surveillance programme.

The university and the future¹

Today, the University of the Philippines is confronted with more challenges as it evolves from its traditional role as a centre of higher learning towards even a more urgent and crucial commitment as a service and resource institution for national development. To cope with this expanded role, the UP has initiated bold and innovative institutional improvements within the University to promote a more effective pattern of relationships among its component units and optimal utilization of its human and physical resources. These innovations include the establishment of the Centre for the Health Sciences and the Management Education Council which provide a new framework for collaboration among academic and research/training units involved in the health and medical fields and in management education and training, respectively. Through this new framework, the component units of the University are expected to be able to respond more fully to the demands by various clientele groups in government, the private sector and the community. As a result, the University could be a more effective organism to realize its intended contributions to the nation.

The University will continue to be a leading centre of quality higher education not only in the country but also in the Asian/Pacific region. Many of its academic units have continued to strengthen, revise or expand their curricular programmes in response to present and anticipated needs. The University has also

¹Office of the President, University of the Philippines, title of the document; *U.P. and the Future: A Perspective Development Plan*, 3rd edition, March 1978.

Thailand: Chulalongkorn University

PRACHOOM CHOMCHAI

In the light of political developments in the country during the last few years, the role of the University as social critic has acquired added the significance. The attainment of development goals and a better quality of life for the Filipino people in all its aspects—social, economic as well as political—may indeed depend to a large extent on the ability of the University to perform this role.

1. The Setting—A Macro-view of Thai Society and its Universities

Overall trends in population and economic growth

A current estimate of population in Thailand puts it at the 45-million mark, and it is growing at the annual rate of about 3 per cent. Up-to-date information on its principal characteristics is not available, though the following historical figures, based on Population Censuses of 1947, 1960 and 1970, may be useful for illustrative purposes:

	1947 (Percentage Distribution)	1960	1970
<i>Nationality</i>			
Thai	97.0	98.2	98.9
Chinese	2.7	1.6	0.9
Other	0.3	0.2	0.2
<i>Religion</i>			
Buddhist	94.1	93.6	95.3
Islam	3.8	3.9	3.9
Christian	0.5	0.6	0.6
Other	1.6	1.9	0.2
<i>Language</i>			
Thai Speakers	—	97.0	—
Non-Thai Speakers	—	3.0	—
<i>Literacy</i>			
Literate	—	70.8	81.8
Illiterate	—	29.2	18.2

It can be seen that the overwhelming majority of the population consists of Thai nationals and that the Chinese constitute an important minority group. As the proportion of Thai nationals grew over the years, the numerical importance of the Chinese declined. Quite apart from the higher natural growth rate of the

institutions were set up by the corresponding government agencies which saw in them places for the training of specialized officials destined for government service. The number of students admitted by these schools was thus limited and most of them were drawn from the government agencies concerned.

The first institution of higher learning in the form of a university was Chulalongkorn University, established in 1917. Originally a palace institution, it later became a civil service college in line with the pattern already noted. In 1917, its status was raised from that of a government-agency institution to that of a university consolidating a number of specialized training institutions. The second university, subsequently known as Thammasat University, was set up in 1933 to provide courses of instruction in the fields of law, political science, economics and diplomacy.

In 1942, another similarly specialized university, now known as Mahidol University, was established with concentration on five areas, namely, medicine, nursing, dentistry, veterinary, science and pharmacy.

In the following year, two more specialized universities, Kasetsart and Silpakorn, were founded in quick succession. The former offered courses of instruction in agricultural sciences, cooperative principles, forestry and fishery and the latter painting and sculpture.

There then followed a lull in the rush to found institutions of higher education. During the 1943-63 period, the country did not witness the birth of institutions of higher learning other than those of colleges of education founded to meet the particular needs of the Ministry of Education.

In 1964, the government suddenly realized the primary importance and need for regionally-balanced development of higher education. Expansion of the higher learning institutions into the provinces in line with the national economic and social development plan was encouraged, and, as a result, universities were set up in the north in 1964, in the northeast in 1966 and in the south in 1967.

Up to the end of the 1960s whatever development in higher education there was confined to the public sector only. It was only in 1969 when the Private Colleges Act was passed that the government allowed private individuals to set up institutions of higher learning. In response to the enabling Act, two private

Thai group, this probably reflects the process of assimilation which has been going on for a number of decades. Naturalization is the official manifestation of the growing trend of such assimilation.

Buddhists make up the preponderant bulk of the population, while Muslims and Christians are important religious minorities. The three religious groups have grown in numerical importance.

The Thai language is the dominant medium of communication, although no figures are available to indicate whether it has become more or less widely used.

Since 1961, when planned development can be said to have begun, there has been a remarkable growth in the rate of literacy, which, in a general way, reflects the total impact of efforts at educational development.

Between 1960-66, real gross domestic product rose at the average annual rate of 7.2 per cent; but, more recently, growth has decelerated. For instance, the corresponding figure for 1974 was only 3.2 per cent. This slow rate of growth, coupled with a comparable rate of population growth, has had little or no impact on the *per capita* level of living of the population.

The development of Thai higher education

Since Thailand introduced its economic development plan in 1961, higher education has expanded rapidly both in terms of new institutions being established, new courses being offered and more students being admitted. Such development may be attributed to two important factors, namely, the acceleration of national economic and social development entailing the need for more high-level manpower, and, the increase in population and young people demanding places in institutions of tertiary education.

Of course, the rapid expansion of the institutions of higher learning has caused an influx of a large number of graduates into the labour market each year and has brought about keen competition for places in the labour market. Unemployment and under-employment owing to graduates' own social adjustment problems and the excess supply of labour have frequently resulted. This will be dealt with in a separate session.

But it would be wrong to give the impression that higher education in this country commenced with planned development. In fact, institutions of tertiary education were first founded in 1889 in the form of such specialized schools as medical and law schools. These

TABLE 1. *Estimated Manpower Demand During
Third National Economic and Social Development Plan 1972-76*

<i>Occupation</i>	<i>Estimated Demand</i>	
	<i>No. of Persons</i>	<i>Percentage</i>
<i>Total</i>	2,586,000	100.0
1. Professional, Technical and Related Personnel	78,000	3.0
2. Administrative and Managerial Personnel	30,000	1.2
3. Clerical Personnel	69,000	2.7
4. Sales Personnel	450,000	17.4
5. Farmers, Fishermen, Hunters, Miners and Related Personnel	1,560,000	60.3
6. Transport and Communications Personnel	89,000	3.4
7. Craftsmen, Manufacturing and Related Personnel	213,000	8.2
8. Service Personnel	97,000	3.8

SOURCE: Office of the National Economic and Social Development Board, Thailand.

power requirements approach during the third plan period (1972-76) of Thailand.

While it is clear that the Third Development Plan envisages the bulk of demand emerging, in line with Thailand's attained level of economic growth, for middle-level technical manpower consisting of farmers, fishermen, hunters, miners and salesmen, it is not so clear whether universities can give the kind of skill required.

Table 2 attempts to match up the supply and demand sides of manpower during the Third Plan period for the public sector only. It is clear from the table that, irrespective of the question as to whether trained specialists are of the right quality, there is an excess supply of manpower in all fields of study, classified according to the Unesco system, in the public sector, which is by far the largest employer in the country. Unless the private sector can absorb the excess manpower, one is tempted to conclude that unemployment and under-employment are bound to result.

Fortunately, the number of university graduates entering the labour market represents only a minority; for the annual increase in university graduates is rather small when compared with the number of other graduates. For instance, according to Population Censuses of 1960 and 1970, university graduates constitute only

colleges were established for academic year 1970, one for 1972 and two for 1973. These private colleges offer courses in business administration, marketing, finance, accountancy, economics, arts and higher professional training.

The upshot of the development described above is that the country has, at present, 22 institutions of higher education of which 12 are run by the government. Of the ten institutions set up and run by private individuals, only eight have the university status. All the UNESCO fields of study, namely, humanities, education fine, arts, social sciences, law, natural sciences, engineering, medical sciences and agriculture are covered. Some 200 courses of study are offered by government institutions alone.

An estimate puts the stream of graduates of the tertiary level between 1889 to 1972 at approximately 200,000. Despite a slow start, their numbers have multiplied annually, especially during the period of the Second National Economic and Social Development Plan (1967-71) when higher education was expanded tremendously so that there was a total of 49,853 graduates for the five-year period alone. This meant an increase of output from 7,050 graduates in 1967 to 13,266 in 1971 or a sharp rise of 88 per cent during the Second Plan period.

Growth in enrolment has had an interesting pattern. In the pre-plan 1950s, there was no obvious enrolment explosion, since a number of part-time university students came into being, probably with little short-term impact on the output of graduates. On the other hand, between 1963 and 1967 there took place an absolute decline in university enrolment which was probably accounted for by the fact that part-time students were gradually being weeded out. The trend of the 1950s resumed, however, in 1968, and it has been accentuated in the 1970s by the establishment of a university based on an open-admissions policy.

Meeting national manpower requirements

When it comes to discussing the role of the university in national development, it is pertinent to enquire whether it is producing the kind of graduates needed by society. The university can hardly be said to be contributing to national development if it fails to meet national manpower needs, and, instead, adds to existing problems of unemployment and under-employment.

Table 1 gives a manpower demand estimate based on the ma-

been grossly underestimated in the manpower demand forecast, as can be seen by a comparison of Lines 1 and 2 of Table 3 with corresponding lines in Table 1. It is quite possible, of course, that there is an element of under-employment of people represented by figures in Table 3, while those of Table 1 certainly envisage a situation where all people are fully employed. Again, it is quite likely, in the light of the prevailing *ex post facto* situation revealed by Table 3, that manpower demand projections contained in Table 1 over-estimate the capacity of universities to produce "farmers, fishermen, hunters, miners and related personnel."

TABLE 3. Number of Employed University Graduates by Occupation
1969 and 1972

Occupation	1969		1972	
	Academic Back-ground	Vocational Back-ground	Academic Back-ground	Vocational Back-ground
Total	49,600	19,600	56,420	20,130
1. Professional, Technical and Related Personnel	23,200	1,600	26,760	9,690
2. Administrative and Managerial Personnel	14,800	3,100	18,850	3,510
3. Clerical Personnel	1,500	800	4,470	3,300
4. Sales Personnel	1,400	200	3,130	810
5. Farmers, Fishermen, Hunters, and related Personnel	—	—	—	—
6. Transport and Communications Personnel	300	200	300	250
7. Craftsmen and Manufacturing Personnel	500	1,600	430	2,070
8. Service Personnel	2,500	500	2,480	550

SOURCE: National Statistical Office, *Labour Force Surveys*, Thailand.

The apparent inaccuracies in the manpower demand forecasts are not surprising, in view of the inherent difficulties in applying the manpower requirements model employed in such exercise as the DECD Mediterranean Regional Project (MRP) to a developing country like Thailand. Typically, the approach attempts, on the one hand, to derive the required educational output from a set of economic-growth projections and, on the other, to identify the variables affecting the required output of each segment of edu-

TABLE 2. *Higher Level Manpower Demand of the Public Sector
and Supply of Graduates by Field of Study*

Fields of Study	No. of Requirements		No. of Graduates	
	1972	Total	Local-1971	Overseas-1972
Engineering	1,108	2,564	—	23
Sciences	264	733	—	13
Medical Sciences	1,447	1,935	—	10
Social Science	1,380	4,988	—	41
Humanities	44	808	—	9
Agriculture	445	1,297	—	9
Fine Arts	83	827	—	5
Laws	112	1,577	—	3
Education	44	12,166	—	9
Military and Police	—	349	—	1

SOURCE: Office of the Civil Service Commission, Thailand.

0.5 and 0.7 per cent of the total number of graduates in 1960 and 1970 respectively.

Since there is only a small number of university graduates each year and the demand for them remains persistent, it can be argued that the problem of finding employment for them is not serious when compared with that faced by other graduates. For instance, a labour force survey (1972) revealed that most of the university graduates had obtained employment, though 2.0 to 3.3 per cent were unemployed. However, the problem may become more serious if the government and private institutions keep on producing graduates without regard for changes in labour-market conditions and national economic and social development priorities. It can also be argued that there does not exist a homogeneous labour market and that university graduates face a market quite unlike that facing other graduates.

Table 3 gives an idea of the occupational distribution of employed Thai university graduates. It shows that, perhaps contrary to the projections of manpower demand contained in Table 1, by far the largest number of them are employed as high-level technical manpower, both in the professional and managerial roles. Perhaps the need for professional staff as well as managers during the process of accelerated social and economic development has

of much help, and Thai planners now seem to have lost faith in them. Mark Blaug, in a study to be referred to in Table 9, has misgivings about the application of the manpower requirements approach to Thailand, and they are based on two practical grounds. First, since the latest population census (for his 1970 study) was the one for 1960, there was no reliable information from which trends in labour-force characteristics—shifts in occupational structure, changes in industrial occupation, changes in participation rates by sex and age—could be determined. The result was that he had to resort to international comparisons which do not necessarily indicate the optimum labour force structure, since not every country involved in the comparisons has planned educational development. Secondly, no figures have been published in Thailand on employment in the public as distinct from the private sector, much less a breakdown of public employment by educational attainment. The wide-spread practice of multiple job holding—particularly by civil servants—also severely limits the usefulness of data on the occupational and sectoral composition of the labour force in Thailand.

The positive role of Thai universities in providing managers and professional men required for development or in "administering managing and meaning" Thai development comes out very clearly in Table 4, where the outstanding role of university graduates is found in the tertiary sectors, especially commerce, transport and other services. These have been the sectors which have witnessed tremendous rates of growth in real terms and have therefore made increasing demands on universities to supply the right kinds of manpower.

Table 5 confirms the dynamic nature of the service sectors. Banking and real estate have had particularly high rates of growth, though they have been affected by the growth deceleration of the 1970s.

Unemployment of university graduates

No matter what one can say about the positive aspect of Thai universities' contribution to national development in supplying manpower needs both in the public and private sectors, it remains true that the number of unemployed university graduates has been growing.

The unemployment burden weighs perhaps more heavily on social science graduates than on others. In a survey report by the

tion. The educational output requirements are based on the forecasts of economic growth and sectoral distribution of output and employment in a given future year. The sectoral distribution of employment is then broken up through a series of computations into a distribution of the labour force by occupation and by level of education. These estimates and the data on the existing stock of educated manpower, less loss due to death, retirement, resignation, and other factors, are used in drawing up a plan of educational development to produce the future manpower requirements. One of the advantages of the manpower requirements approach consists in its circumventing a problem, encountered in the rate-of-return approach to be taken up later, in estimating shadow prices for the use of resources for which there are no valid market prices.

An important assumption implicit in the manpower requirements method is that adequate data are available, on the demand side, relating to the number of persons required in the economy in each occupation for a given future year, the present number of persons in each occupation, the annual number of withdrawals from each occupation due to death, retirement, or movement out of the labour force, and the annual number of separations from one occupation and accessions to another as a result of job changes.

Similarly, on the supply side, it is assumed that data are available on the existing output of the educational system by the year in question, adjusted for withdrawals and occupational changes. The difference between the required and anticipated stock of personnel in each occupation expected by the target year provides the basis for the computation of the required change in the annual number of graduates from the various levels and types of education. Such a computation further assumes that each occupation is uniquely related to a specific educational background, as indicated by the experience of the industrialized countries. In other words, this means that there can be no substitution between occupations in the production of a given industry's output and that there can be no substitution between different kinds of education in the performance of the operations or functions that define a given occupation.

Apart from the difficulty of obtaining such data, the use of norms or fixed coefficients applicable to industrialized countries can produce highly misleading results. It is also hard to estimate manpower needs for lower skills.

On the whole, such manpower demand forecasts have not been

tration of unemployment in urban areas, especially in the Bangkok Metropolis, and this partly reflects university graduates' reluctance to work in the rural areas. Finally, many university graduates seeking employment have previously been employed but wish to find new jobs offering better prospects and working conditions. It is true, of course, that those who formally seek employment through the Department of Labour have not previously been employed.

TABLE 6. Number of Unemployed University Graduates 1969 and 1972

	1969			1972		
	Total	Previ-	Not	Total	Previ-	Not
	Employed	ously	ously	Employed	ously	ously
Whole Kingdom	1,200	100	1,100	2,650	380	2,270
Academic Background	900	100	800	1,880	190	1,690
Vocational Background	300	—	300	770	190	580
Municipal Areas	1,200	100	1,100	2,650	380	2,270
Academic Background	900	100	800	1,880	190	1,690
Vocational Background	300	—	300	770	190	580
Bangkok-Thonburi	1,100	100	1,000	2,210	250	1,960
Academic Background	800	100	700	1,670	190	1,480
Vocational Background	300	—	300	540	60	480

SOURCE: National Statistical Office, *Labour Force Surveys*, Thailand.

The foregoing paragraphs have been based on labour force surveys with particular reference to 1969 and 1972. More recent sample surveys confirm the impression that the army of unemployed university graduates may be on the increase. Preliminary findings of an employment survey of the university graduates' output of academic year 1973 conducted in 1974 revealed that 2,791 have been added to the numbers of graduates looking for jobs. A sample survey, of which the findings are summarized in Table 7 show that graduates of various state institutions were unevenly hit.

Table 7A depicts the latest situation with regard to university graduate unemployment. It shows that the rate of unemployment is generally lower the higher level of university education. Thus, at the post-graduate level, the rate of unemployment was only about

TABLE 4. *Number of Employed University Graduates by Industry
1969 and 1972*

Industry	1969		1972	
	Academic Background	Vocational Background	Academic Background	Vocational Background
	Total	49,600	9,600	56,430
1. Agriculture, Forestry Hunting and Fishery	—	—	60	—
2. Mining and Quarrying	100	—	710	70
3. Manufacturing	2,200	700	8,010	1,140
4. Construction, Repair and Demolition	2,300	700	1,310	360
5. Electricity, Gas, Water and Sanitary Services	1,500	1,200	1,560	1,140
6. Commerce	7,200	1,100	12,330	3,190
7. Transport, Storage and Communication	1,500	400	1,900	990
8. Services	34,800	5,500	35,550	13,260

SOURCE: National Statistical Office, *Labour Force Surveys*, Thailand.TABLE 5. *Growth Rates of Real Gross Domestic Product by Industrial
Origin, 1969-72 (percentage figures based on 1962 prices)*

Industrial Origin	1969	1970	1971	1972
Gross Domestic Product	7.9	7.3	5.8	3.1
Wholesale and Retail Trade	5.8	11.9	4.1	8.1
Banking and Real Estate	17.0	16.5	12.0	8.4
Services	7.0	7.4	5.7	6.7

SOURCE: National Economic and Social Development Committee, Thailand.

Lahour Department, it was found that, out of 100 persons gainfully employed, about two-thirds of those who had spent more than four months looking for jobs were university graduates in the social sciences.

Be that as it may, the unemployment situation may not be as serious as it may seem at first sight. Indeed, there are three mitigating factors worth mentioning. First, unemployment results as much from inability to find jobs as from unwillingness to accept jobs considered to be below the status of university graduates or jobs unrelated to qualifications they formally possess. Secondly, there is over-concen-

TABLE 7A. *Output of University Graduates and Proportion Unemployed Academic Years 1973-75*

Level and Discipline	1973			1974			1975		
	1	2	3	1	2	3	1	2	3
Post-graduates	1,636	—	—	1,398	62	4.4	1,473	65	4.4
Graduates	12,039	783	6.5	14,496	2,205	15.2	17,513	2,648	15.1
Humanities	944	92	9.7	949	150	15.8	919	145	15.8
Education	4,162	271	6.5	6,343	1,180	18.6	7,880	1,466	18.6
Fine Arts	143	4	2.9	174	18	10.4	174	18	10.4
Social Sciences	2,896	203	7.0	2,685	325	13.1	3,146	381	12.1
Law	793	115	14.5	846	231	27.3	1,110	303	27.3
Natural Sciences	478	26	5.4	667	106	17.4	619	108	17.4
Engineering	756	24	3.2	945	95	10.0	1,056	105	10.0
Medical Sciences	1,145	23	2.0	1,194	20	1.7	1,738	29	1.7
Agriculture	722	25	3.5	753	80	10.6	879	92	10.6
Diploma-holders	7,570	1,488	19.7	7,234	2,714	37.5	9,373	3,566	38.0

IOutput.

2Number Unemployed.

3Unemployed as Percentage of Output.

SOURCE: National Economic and Social Development Board, Thailand.

TABLE 7. Percentage of 1973 University Graduates Employed
as of March 1974

Institution of Higher Education	Percentage Employed
Chulalongkorn University	77.09
Kasetsart University	60.23
Konkaen University	68.81
Chiangmai University	66.08
Thammasat University	61.42
Mahidol University	88.22
Silpakorn University	72.46
Sri Nakharinwirot University	89.50
Prince of Songkla University	86.18
King Mongkut's Institute of Technology	93.35
Total	76.50

SOURCE: State Universities Office

4 per cent in academic years 1974 and 1975, and in fact, all those who obtained post-graduate degrees in academic year 1973 could find employment. At the first-degree level, the rate of unemployment was greater and on a rising trend. It increased from 6.5 per cent in academic year 1973 to 15.1 per cent in academic year 1975. Of course, those who suffer most from unemployment are those with university diplomas which are below first degrees. Here again, the rate of unemployment is on a rising trend. It was 19.7 per cent in academic year 1973 and jumped to 38 per cent in academic year 1975.

Various disciplines have been performing unevenly in the labour market. Table 7A also gives a disciplinary break-down according to the Unesco system of classification for first-degree holders. It can easily be seen that only those with first degrees in medical sciences have had a low rate of unemployment. The other disciplines, including those more technologically-oriented like engineering, have been suffering badly, the worst hit, in relative terms, being law. Unfortunately, similar information is not available for post-graduates and diploma-holders.

The total impact of Table 7A is quite alarming. In academic years 1973, 1974 and 1975, contingents of 2,271, 4,981 and 6,279 respectively were added by universities to the existing army of unemployed. If anything, earlier surveys have overlooked the grow-

TABLE 8. *Educational Development Expenditure by Educational Level 1972-76*
 (millions of baht—145\$ = 20 baht)

<i>Educational Level</i>	<i>1972</i>	<i>1973</i>	<i>1974</i>	<i>1975</i>	<i>1976</i>
1. Primary and Kindergarten	2,924.18 (55.9)	3,117.12 (54.4)	3,378.18 (53.7)	3,598.22 (53.1)	3,746.87 (52.1)
2. Secondary, Vocational Teacher Training and Higher Professions	1,169.46 (22.4)	1,383.34 (24.1)	1,552.65 (24.7)	1,655.69 (24.4)	1,729.60 (24.1)
3. Higher Education	878.93 (16.8)	953.89 (16.6)	1,064.59 (17.0)	1,196.90 (17.7)	1,357.96 (18.9)
4. Adult and Other Special Education	254.26 (4.9)	282.42 (4.9)	291.82 (4.6)	324.19 (4.8)	351.73 (4.9)
Total	5,226.83 (100)	5,736.77 (100)	6,287.24 (100)	6,775.00 (100)	7,186.16 (100)

SOURCE: NESDI. *The Third National Economic and Social Development Plan, 1972-76.*

ing numbers of unemployed university diploma-owners, whose plight is emphasized in Table 7A.

Optimum resource use in education

The prospect of some university graduates' being unemployed upon leaving universities may not be as gloomy as it may appear at first sight if it is remembered that educational development transforms potential human wealth into a real asset both in terms of working capacity and cultural and social satisfaction. Of course, the potential capacity for work which has been developed cannot be realized so long as university graduates remain unemployed, though it can be argued that their cultural and social needs have been met. Meeting the cultural and social needs as apposed to creating productive capacity need not necessarily amount to using resources entirely for consumption purposes; for a genuinely satisfied human being could promote national values as well as becoming more productive. The increasing degree to which cultural and social needs have been satisfied can be taken to be a sign of development, and here again, it can be argued, the university in Thailand has had a positive role to play in the developmental process. On the other hand, it can be said that the university can contribute to development only so long as its emphasis is on quality; for well-trained university graduates remain a national asset throughout their lives, no matter whether they are employed or not.

Be that as it may, a developing country can ill afford to devote a sizable proportion of its scarce resources to tertiary education, least of all if only to turn out graduates many of whom become idle and eventually, unless work can be found, unemployable.

Table 8 shows that an increasing proportion of the national budget has been devoted to higher education, which, by 1976, should be getting a share of almost 19 per cent of the national total devoted to education. If Thailand is serious about maximizing the returns to resource use, Mark Blaug, applying the rate of return approach as an alternative to the manpower requirements approach to Thai education, thinks that priorities have to be adjusted in the light of his study. His findings are summarized in Table 9.

Typically, a rate-of-return model is based on an analysis of the internal rate of return on investment in education through present value-cost comparisons derived from education-age-income data. Instead of estimating manpower demand at various levels of school-

that private rates of return were considerably higher than social rates, since the private costs of schooling are usually only a fraction of the total resource costs. While this was true of all levels of education, the largest State subsidy seems to have gone to higher education, where direct costs amounted to only 18 per cent of the social costs.

The highest social rate (27 per cent) was achieved with the completion of the lower primary level. The marginal social rate of obtaining at least some primary schooling (2-3 years) was the second highest rate (20 per cent). This pattern suggests that while considerable benefits accrue to individuals who have some primary schooling, the real benefit falls to those who complete the level by finishing the lower primary level. For higher education the private rates did not differ much from those of secondary education.

In terms of social rates, it was found that vocational schooling whether public or private, yields a lower return than did general academic schooling (8 per cent as against 10 per cent) due to higher costs not matched by higher earnings among vocational school graduates.

Blaug's principal finding, therefore, suggests that resources should be shifted towards primary education and away from higher education. This follows from the economic objective of equalizing marginal rates of return in all directions to achieve an optimum allocation of resources: unequal marginal rates create the possibility of getting more out of existing resources by reallocating them. Surprisingly, Blaug's evidence demonstrates that secondary education is not a priority area in terms of economic objectives and that there is even less justification for spending extra funds on vocational rather than general academic secondary schools.

Blaug surprisingly notes that, from a social and political viewpoint, primary schooling is likely to be a "socializing" and "nation-alizing" influence on society. This is conducive to development understood in the broad sense of the term. On the other hand, he argues that the same cannot be said of secondary schooling and higher education; for the production of possibly unemployable graduates on the basis of an open-admissions policy may be socially disruptive. This is, however, Blaug's *obiter dictum*, the truth of which remains to be demonstrated.

In any case, Blaug's economic findings need to be qualified. First, the earnings figures used as a basis of his research refer only to the

ing required for a given pattern of economic growth as in the case of the manpower requirements approach, the aim of this method is to estimate the economic benefits accruing from the costs of schooling. While this method provides a basis for an investment-decision theory, it has, for various reasons, not found wide acceptance with the planners. First, it ignores the non-economic and also the indirect economic benefits of education, though this is equally true of the manpower requirements model. Secondly, the data necessary for this model are not generally available in the developing countries. Again, the same problem exists in some degree in the manpower requirements approach as well. Thirdly, it does not take into account the income effects of ability, motivation, and family status that interact with schooling. Finally, it does not seem to reflect the effects of future changes in contents methods of the schooling system and in the pattern of economic growth, which are important variables affecting the productivity of investment in education. While the second defect and the third are statistically surmountable, the remaining ones are more intractable.

It is clear from Table 9 that in Thailand in 1970, Blaug found

TABLE 9. *Social and Private Marginal and Average Rates of Return, Men and Women Combined, 1970 (Percentage Figures)*

Type of Level of Schooling	Marginal Rate ^a		Average Rate ^a	
	Social	Private	Social	Private
1	17	26	17	26
2=3	20	34		
4	27	49	20	38
5=6	14	18		
7	14	15	17	24
8=10	10	11		
11=12	10	11	14	16
13=14 (Academic)	7	12		
13=14 (Teacher Training)	8	9		
15 (Academic)	7	9		
16	7	11	11	13

^aThe marginal rate of return reflects the rate of return of one more grade of education, while the average rate of return shows the rate of return on the total education received.

SOURCE: Mark Blaug, *The Rate of Return to Investment in Education: A Report to the National Educational Council on the Third Educational Development Plan*, National Education Council, Bangkok, 1971.

model for use by developing countries in Asia. Application of a well-adopted model should help to avoid difficulties caused by straight borrowing of what appears to have been developed by more advanced countries for their exclusive use.

Table 10 summarizes recent inflationary experience in Thailand in the form of consumer price indices for the Bangkok Metropolis alone. It can be seen that the consumer price index for recreation, reading and education has one of the lowest rates of increase. In fact, as far as education goes, the typical consumer has been helped by governmental control which entails one basic difficulty for universities, namely, inability to raise fees sufficiently in the face of rising costs.

Planned expenditure on high education in real terms actually fell between 1972 and 1974. In other words, unanticipated inflation in 1974 changed a planned nominal increase of 21 per cent in money terms into an *ex post facto* effective decrease of about 5 per cent in the commitment of real resources (at 1962 prices) to higher education. Such is the total impact of inflation on real resource use for the development of high education in Thailand.

The predominant role of labour costs in the operation of universities in Thailand should be noted, and their importance had been much enhanced by 1974. This partly reflects a conscious effort on the part of the Government and universities to give increased incentives to staff during conditions of inflation. In 1970 there were about 5,430 and 4,531 university academic and non-academic staff members respectively, and they were getting roughly baht 28,295 or US \$1,360 per head per year. In 1974 the corresponding figures were 8,435 and 3,999 and they were paid at the rate of baht 39,047 or US \$1,877 per head per year, which represented a 38 per cent improvement in money terms. It is, clear, however that the real income position of university staff had been considerably eroded by then: a 38-per cent nominal increase as against a consumer price index increase of 51 per cent afforded no solace. This impact of inflation on groups whose incomes are relatively fixed is not new but a continuation of the post-war trend. As with other civil servants, university staff are paid at rates much below those obtaining in commerce and industry, making it extremely difficult to hold and attract able people, especially since university jobs do not yield fringe benefits available from other sectors of the civil service. Those who remain in university teaching, on account of

Bangkok-Thonhuri Metropolis and not the whole Kingdom. This casts doubt on his principal finding to the effect that there are higher rates of return to primary as against secondary and higher education. Secondary, his cost data with respect to higher education were derived from an analysis of budgetary figures which are at best projections while those with respect to primary and secondary schools were based on a new survey of educational institutions. It is likely that projected budget figures are on the high side due to the inability of universities to exhaust their projected appropriations within the fiscal year, thereby tipping the cost-benefit balance against higher education. Finally, such cost-benefit analysis as has been applied by Blaug is essentially static and short-run in nature. It does not possess data on a time-span sufficiently large to take account of the social impact of the generation and accumulation of knowledge by universities, and of the necessarily gradual and long-term nature of the demand response of society to the availability of new knowledge and skills generated by educational institutions.

There is, apart from difficulties already noted, some controversy over the use of cost-benefit analysis in education, since it can be argued that the issue is fundamentally one of values. If the goal of educational development is only investment in human capital for productivity purposes, then cost-benefit analysis carefully applied is appropriate. On the other hand, as has been mentioned above, if the goals of educational development are also social and cultural, then the cost-benefit ratio alone cannot be decisive.

In sum, Blaug's conclusions seem to be at variance with those derived from the manpower requirements approach discussed in a foregoing section, and there is no rational basis for exclusive reliance on one approach or the other. Be that as it may, it seems best to steer the middle course. Instead of discarding both the rate of return approach and the manpower requirements approach, it seems more appropriate to let the conclusions derived from each approach stand as they are and complement each other. Indeed, the application of some educational planning models to Thailand, viewed as an example of developing countries in Asia, has shown that they do not exactly fit her requirements in educational planning. Developing countries in Asia have, therefore, to look elsewhere for guidance. In fact, there is much that can be achieved, through such regional bodies as ESCAP or the Mekong Committee, by way of regional cooperation, to develop a suitable manpower planning

education or necessity, are under great pressure to supplement their income by outside employment, to the detriment of their regular work. Yet, things were not always thus. Before the Second World War university and indeed civil service pay-scale was nearly in line with that of other occupations. The war and wartime inflation put an end to all that. To restore university incomes to equality in purchasing-power with those of 1938, the Government would probably have to quadruple the existing pay scale—something it certainly cannot afford to do.

It is clear from our cursory survey of inflation in the 1970s in Thailand that it has seriously impaired the ability of the Government to plan the development of institutions of tertiary education. Apart from this total impact, expenditure constraints imposed by the Government made efficient operation of universities extremely difficult. In particular, universities have been unable to compensate staff for loss in real income due to inflation, and money earmarked for facilities and equipment understandably lost a great deal of its purchasing-power. Quality has, as a result, suffered. All this is not new; for recent inflation has largely accentuated the trends initiated by inflation during the Second World War, and universities have reacted by placing less reliance on the Government budget with varying degrees of success. Despite such development, universities remain chiefly dependent on the Government for financial support and are basically welfare-service institutions in that they are largely state-financed and that those undergoing high education bear a small proportion of its costs.

TABLE 10. Consumer Price Index and Inflation Rates for Bangkok Metropolis by Groups
 (October 1964-September 1975=100)

Period	All Items Index Rate %	Food Index Rate %	Clothing Index Rate %	Housing Index Rate %	Personal and Medical Care Index Rate %	Transport Index Rate %	Tobacco and Alcoholic Beverage Index Rate %		Recreation, Reading and Education Index Rate %	
							Index Rate %	Index Rate %	Index Rate %	Index Rate %
1964 (Oct.-Dec.)	100.2	—	100.6	—	99.8	—	99.7	—	99.8	—
1965	100.4	0.20	100.5	-0.10	100.1	0.30	100.3	0.60	100.3	0.60
1966	100.4	0.0	107.9	7.36	99.6	-0.50	102.6	2.29	102.0	1.69
1967	108.9	8.47	115.7	7.23	99.9	0.30	105.0	2.34	103.1	1.76
1968	110.9	1.84	118.8	2.68	101.0	1.10	105.1	0.10	104.7	0.87
1969	113.6	2.43	123.6	4.04	101.6	0.59	106.2	1.05	105.2	0.48
1970	113.5	-0.09	121.6	-1.62	103.1	1.48	108.2	1.88	105.6	0.38
1971	114.0	0.44	119.1	1.89	106.2	3.01	110.5	2.13	109.8	3.98
1972	119.5	4.82	127.3	7.12	108.7	2.35	112.9	2.17	114.4	4.19
1973	138.1	15.56	153.7	20.27	125.9	15.82	125.8	11.43	118.7	3.76
1974	171.7	24.33	198.8	29.34	149.7	18.90	146.0	16.06	134.1	12.97
1975 (July)	179.5	4.54	205.7	3.47	159.7	6.68	153.6	5.21	145.9	8.80

SOURCE: Bank of Thailand, *Monthly Bulletin*.

A Department of Education was established in the Faculty of Arts and Science in 1930 and began by offering a one-year course leading to a diploma in education. The prerequisite for admission was a two-year course in Arts or Science offered by the Faculty of Arts and Science.

When the Law School of the Ministry of Justice was dissolved in 1933, the Faculty of Political Science took over the teaching of Law at the same time changed its name to the "Faculty of Law and Political Science." At the end of the year, an act was passed which transferred the Faculty of Law and Political Science to the newly-established University of Moral and Political Sciences, now Thammasat University.

In 1935, the first Chulalongkorn University Act was promulgated, establishing degrees in Medicine, Arts, Science and Engineering, and the first bachelor's degrees were conferred at the end of that year. The first Master's degrees followed in 1942. According to this Act, the University consisted of the Faculties of Medicine, Engineering, Arts and Science, and the Departments of Architecture and Pharmacy.

In 1942, the Faculty of Medicine, together with the Departments of Pharmacy, Dentistry and Veterinary Science, were separated to form what is now Mahidol University.

In 1948, the Faculty of Political Science was re-established, and the Faculty of Arts had its name changed to that of Arts and Education.

In 1957, a Royal Decree was issued, raising the status of the Department of Education to that of a faculty so as to enable it to cope with its expanding work.

The year 1959 saw the SEATO Graduate School of Engineering established at the University under the auspices of the South-East Asian Treaty Organization. Cooperation between the University and the SEATO Graduate School continued until its termination in 1967, by which time the school had been converted into an independent Asian Institute of Technology (AIT), now located at Rangsit on the periphery of Bangkok.

In 1959, Chulalongkorn University was transferred from the jurisdiction of the Ministry of Education to that of the Office of the Prime Minister. In that year the school of Analytical Chemistry Training became affiliated with the University. By the Chulalongkorn University Act of 1943 together with its six Amendments and

2 Chulalongkorn University— A Micro-study of a Sub-system

Historical sketch

Although its 1917 founding date makes Chulalongkorn University Thailand's first university, its history actually goes back considerably further and is full of interesting developments. In fact, the university's growth reflects several decades of the country's development.

The idea of establishing such an institution originated in King Chulalongkorn's (Rama V) reign (1868-10), and the Royal Pages' School was established by King Chulalongkorn in 1902 within the precincts of the Grand Palace. The aim of the school was to give a general education with emphasis on training in government administration.

By the Royal Proclamation of H.M. King Vajiravut (Rama VI) in 1911 the Royal Pages' School became the Civil Service College. Courses in Agriculture, Commerce, Education, Engineering, Foreign Service, Law, Medicine and Public Administration were planned.

In 1971, the status of the Civil Service College was raised to that of a university. As a memorial gesture it was named Chulalongkorn University.

The Medical School at Siriraj Hospital, founded in 1889, and the Engineering School at Hor Wang, founded in 1913, were subsequently amalgamated with the University.

Originally, there were only four faculties in the University: the Faculties of Medicine, Political Science, Engineering and Arts and Science. Only diploma courses of three years' duration were offered.

Between 1923 and 1934, the Rockefeller Foundation cooperated with Chulalongkorn University in its effort to reform the teaching of medicine and make it possible to grant medical degrees. These were first conferred in 1930.

500 acres, a plot of Crown Property formally endowed to the University by an Act of 1939. This valuable piece of land is valued at a minimum price of 6,200 million baht or US\$ 298 million. Parts of it constituting business and residential areas afford the university an annual income of about 3 million baht or US \$162 thousand, which constitutes about 10 per cent of the annual University revenue.

In fact, when King Vajiravut (Rama VI) gave part of the Crown Property for the purpose of establishing the University, his idea was that it might also be used for earning an income to support the University. Areas not being used as university grounds proper have therefore been used as sites for the National Stadium and schools as well as for business and residence. At one stage, part of this business and residential area became so depressed that a development programme was launched over an area of about 139 acres and this has resulted in the formation of one of the leading business centres of the metropolis.

Because of the ample amount of space available, the growth of the university has not been restricted, though it has not always been easy to dislodge tenants from grounds needed for continuous university expansion.

Chulalongkorn's claim to be a university of national importance is supported by key statistics of Table 11.

As far as student enrolment, output of graduates, and budgetary and non-budgetary resources are concerned, Chulalongkorn University's relative place has been somewhere near one-fifth of the national total, though some radical changes have taken place over the years.

Its relative importance in the number of students and graduates has hardly changed over the 1967-73 periods, and the stability of its relative place is surprising in view of the tremendous growth of higher education witnessed by Thailand in recent years. On the other hand, its relative staff strength has been strengthened, at any rate in terms of numbers, though the qualitative aspects of staff remain an open question. Again, while the relative support given by government budgetary appropriations may have decreased somewhat, the relative decline of its extra-budgetary revenue is appreciable. Finally, though by 1973 Chulalongkorn appears to have lost its lion's share of scholarships awarded to staff it gained in 1967, its relative position with regard to financial support given to staff

a Royal Decree, the University came to consist of the Faculties of Engineering Arts, Science, Architecture, Commerce and Accountancy, Political Science, and Education. The Faculty Medicine at Chulalongkorn Hospital and the Faculty of Veterinary Science from Mahidol University and the University of Agriculture (currently Kasetsart University,) came under its control in 1967. Since then growth has been extremely rapid. In line with the second National Educational Development Plan, the Faculty of Economics and the Institute of Population Studies were inaugurated in 1970. During the year, the Red Cross College of Nursing was affiliated to the University.

In 1972, the Faculties of Dentistry and Pharmaceutical Science were transferred from Mahidol University and the Thailand Information Centre was opened. This year also saw the creation of the Faculty of Law, the Computer Science Centre and the Foundation for Research Activities.

The Graduate School, added in 1961, holds faculty status and is responsible for graduate teaching and research in all disciplines. It also functions among academic departments in offering graduate studies as well as an administrative centre to promote the standard of graduate programmes and activities.

Evening courses have been offered since 1965. They are now offered in the Faculties of Science, Engineering, Commerce and Accountancy, Law, Education, Arts and the Faculty of Communication Arts.

Recently the University has greatly expanded its educational programmes. Among its many projects are special training in the fields of medicine, languages, library science, computer science, and a great variety of other academic fields.

During the last decade the University has received much valuable assistance in the form of personnel, equipment, books, fellowships, scholarships and grants for its students and staff members from various organizations, embassies and foreign universities. Also flourishing is a network of mutual assistance and exchange programmes between Chulalongkorn University and various schools and organizations abroad.

Location: a Multi-dimensional measuring-rod

Chulalongkorn University is located at one of the business centres of the Bangkok-Thonburi Metropolis, in an area of about

As can be seen from Table 12, Chulalongkorn graduates hail from all parts of the country, and the largest concentration from the central part is easily understood when it is remembered that it reflects, though in an exaggerated fashion, the central part's population concentration and density.

Table 13 gives a snapshot of the situation in academic year 1973 and shows that Chulalongkorn University is a general university in terms of its disciplinary coverage. It, therefore, has a claim to be something of a representative university in very much the same sense that the celebrated English economist Alfred Marshall uses the term "representative firm."

Guiding values

Article 4 of the 1943 Chulalongkorn University Act, the first in a series, states: "Chulalongkorn University shall be an institution for the study of and research in the various disciplines with a view to promoting advanced professional training and national culture." Again, Article 4 of the 1954 Chulalongkorn University Act which constitutes the basis of current Chulalongkorn University legislation states: "Chulalongkorn University shall be an education and research institution devoted to the promotion of advanced academic and professional training and national culture." There is no doubt that the latter official formulation is much broader in scope and more liberal in its intention. Fuller elaboration of these earlier ideas is to be found in current official literature.

In *Development Plan for Chulalongkorn University*, an official document produced in February 1976 to serve as an input for the Fourth National Development Plan (1977-81), the primary objective of the development of higher education is clearly stated, in line with government policy, to be a more intensive pursuit of the activities of training, research, rendering of technical services to society and upholding of cultural values. There cannot be any basic disagreement with such comprehensive statement of guiding ideals, except in the matter of where to place an emphasis and how to interpret the statement.

The University backs up its stated ideals with a development budget of US \$94,756 million for the five-year period, and there is no doubt, from the break-down of expected development expenditure, about its order of priorities.

It is clear from the planned financial commitments that the

TABLE 11. *Relative Place of Chulalongkorn University in National University System 1967 and 1973 Academic Years*

	1967 ¹	1973 ¹
1. Student Body (As Percentage of National Total)	8,601 22.5	15,855 22.0
2. Graduate Output (As Percentage of National Total)	1,580 21.6	3,223 20.1
3. Teaching Staff (As Percentage of National Total)	1,000 20.5	2,261 24.7
4. Government Budget (US\$ mil.) (As Percentage of National Total)	3.2 ² 17.5	6.8 ² 16.3
5. Extra-budgetary Revenue (US\$ mil.) (As Percentage of National Total)	0.3 ² 16.0	0.4 ² 9.7
6. Value of Scholarships Awarded to Staff (US\$ mil.) (As Percentage of National Total)	0.2 ² 36.2	0.9 ^{2,3} 7.9
7. Value of Research Grants Awarded to Staff (US\$ mil.) (As Percentage of National Total)	0.6 ² 7.5	0.5 ^{2,3} 63.6

¹Fiscal years for budgetary figures.²The rate of exchange applied being 20.8 baht to US\$1.³1972 calendar year.

SOURCE: Office of National Education Council and Office of State Universities, Thailand.

research activities has been considerably strengthened. Its current capacity to attract research funds is not surprising in view of its staff strength noted above.

Chulalongkorn University's claim to be a university of national importance can also be supported by statistics relating to the composition of its student body, roughly equally divided between the two sexes.

TABLE 12. *Regional Distribution of Domicile of Chulalongkorn Student Body, Academic Year 1973 (Percentage Figures)*

Centre	North	North-East	East	South	West	Other*
51.86	7.20	5.18	6.07	10.00	5.93	13.76

*Includes those coming from abroad and those who failed to specify their domiciles.

SOURCE: *Data on Undergraduate Students*, Chulalongkorn University 1974.

Architecture
Mass Communications

¹National Institute of Development Administrative.

²King Mongkut's Institute of Technology.

³Currently Sri Nakharinwirot University.

⁴Open-admissions University.

SOURCE: State University Bureau.

Table 13 Faculty-level Disciplinary Composition of Thai State Universities Academic Year 1973

<i>Disciplines with Faculty Status</i>	<i>Agriculture</i>	<i>Archaeology</i>	<i>Fishery</i>	<i>Forestry</i>	<i>Fine Arts</i>	<i>Science and Arts or Humanities</i>	<i>Engineering</i>	<i>Education</i>	<i>Economics</i>	<i>Social Science or Administration</i>	<i>Business or Commerce</i>	<i>Veterinary Science</i>	<i>Dentistry</i>	<i>Nursing</i>	<i>Statistics</i>	<i>Law</i>	<i>Medicine or Medical Technology</i>	<i>Public Health</i>	<i>Pharmacy</i>	<i>Politics or Public Administration</i>
Ramkhamhaeng						X	X	X								X				
College of Education								X												
KMIT ^a						X	X													
NIDA ^a								X	X						X					X
Prince of Songkla						X	X									X				X
Silpakorn	X					X	X	X												
Mahidol							X							X	X		X	X	X	
Thammasat						X			X	X	X	X		X		X			X	
Chiangmai	X					X	X	X	X				X	X		X		X		
Chulalongkorn						X	X	X	X	X						X	X	X	X	
Konkaen	X					X	X	X							X					
Kasetsart	X					X	X	X	X	X	X			X	X					

systems are breaking down in the developing countries and that university youth have to find a new code defining their rights and obligations and modes of behaviour in relation to other categories of persons. In fact, university graduates are creating a new class of such people as professionals, managers, administrators, hankers and artists. When such a class emerged in Western Europe, at the end of mediaeval times, it may be said to have inherited the code of the mediaeval guilds. But the new middle class in a developing country, faced with rapid social and political changes, has to define a new ethical code. Indeed, even students, before their graduation, can be said to constitute a class in their own right, and their code of social ethics remains to be defined, particularly in view of the fact that students' uprising of 1973 toppled a government and ushered in a new era of democracy in Thailand.

The orthodox approach of the university to its role in developing the social conscience is to emphasize the value of teaching the humanities and the social sciences to all students, because these are the disciplines where the crucial problems of man's relationship to man has been intensively debated for more than two thousand years. This is why Thammasat University has, following the American model, established a Faculty of Liberal Arts, where subjects have been made compulsory for all students on a university-wide basis. Chulalongkorn has, on the other hand, perhaps been more active in the field of aesthetics, and a conscious effort has been made to promote things like music appreciation.

The crucial question is, of course, what culture is to be transmitted. When the West made an encroachment into India about 100 years ago, it assumed that it should promote Western culture in India, although the country has its own indigenous artistic traditions. There is a danger that, in a process of modernization, a university in Thailand may be tempted to do the same thing. Be that as it may, there are strong traditionalist groups seeking to conserve and propagate Thai musical, dramatic and other artistic forms.

The University is also being looked upon as the "trainer of skills." The emphasis on this role as compared to that of the bearer of culture may have changed with the times. When there were very few university graduates, the priority was, of course, on professional training for employment awaiting graduates. When the Chulalongkorn University Act was first enacted in 1943, the emphasis on this aspect of university work was obvious. Now that more gradu-

primary emphasis, even in its seventh decade of existence, will be on turning out good graduates which may not necessarily mean teaching alone. Presumably, research related to teaching will be included in lines, 1, 2 and 3 of Table 13A, while independent research (line 4) will be relegated to the background. Provision of technical services to society and promotion of cultural values are activities to which the university seems to attach the least importance in terms of financial commitment.

TABLE 13A. *Break-down of Fourth-Plan Development Expenditure (1977-81) for Chulalongkorn University*

<i>Activity</i>	<i>Amount in US \$ millions¹</i>	<i>Percentage</i>
1. 'Production' of Graduates	71,328	82.28
2. Development of Staff, Students and General Administration	4,162	4.83
3. Promotion of Studies and Research	5,154	5.99
4. Research	4,576	5.31
5. Provision of Technical Services to Society and Promotion of Cultural Values	867	1.03
Total	94,756	100.00

¹The five items may not add up exactly owing to rounding off and rate of exchange conversion.

SOURCE: Chulalongkorn University, *A Development Plan for Chulalongkorn, University Fourth-Plan Period (1977-81)*, February 1976 (mimeographed).

Much discussion has taken place on the effective guiding values of the university as opposed to nominal ones appearing in university legislation and plans, especially in an atmosphere where educational reform has been very much in the air. The central headings of university-wide discussion are almost the same as those covered by Sir Arthur Lewis in his lecture on *The University in Less Developed Countries* delivered at the Vice-Chancellors' Conference in Ibadan, Nigeria in January 1974, which has served as an outline for the following impression of the current trend of the debate.

Chulalongkorn has been given a role as the "bearer of the culture." This function has been vaguely described, though it must be recognized that a university like Chulalongkorn, far from transmitting the national culture, may be part of the forces that try to change traditional society. There is no doubt that traditional social

contrary, they feel that, as the number of universities grows along with university enrolment, the number of research-dominated universities should be restricted. In sum, they view Chulalongkorn as the research university *par excellence*—something not quite in line with the university's official plan targets.

Finally comes the role of the university as a service agency. As a matter of course, a State University's staff members, who are concurrently civil servants, serve on public committees and do extra-mural work. The feeling in some university circles is that the efficient performance of such public functions, financed out of the Treasury, involves an element of political neutrality. Thus some members of the university would frown on academics' becoming active members of political parties. To them, it would be better for such academics not to identify themselves with political parties but to make it clear to the public at large that their advice is available to clients regardless of religions, languages or races. This does not amount to precluding academics from participating in debates on public issues so as to create a well-informed and articulate public opinion. Such university circles see that the current danger lies in the deterioration of the situation to such an extent that universities may become sanctuaries for subversive elements pledged to overthrow society by violence.

The current debate on the effective guiding values of Chulalongkorn University is unlikely to be conclusive. Indeed, the Report of the Committee for Establishing the Framework for Educational Reform entitled *Education for Life and Society* (1974) finds that "the present objectives of higher education are not distinct and therefore not...dependable...." and proposes, instead, the following formulation:

- 4.2 Higher learning institutions should have the functions and responsibilities as follows:
 - 4.2.1 To provide competent teaching producing highly qualified graduates to serve society.
 - 4.2.2 To conduct research projects for academic advancement and progress and apply research findings to help solve various social problems.
 - 4.2.3 To render public services with academic and technical knowledge.
 - 4.2.4 To provide various cultural and artistic activities in order

ates have been turned out, and there exists considerable unemployment of university graduates, there is much discussion of diverting the stress to its cultural role.

Not all skills can be taught at a university, and a traditional criterion is to limit the university's role to that of imparting only skills having a major intellectual content. However, this theory is not always borne out in practice, as a glance at the disciplinary composition of Thai universities portrayed in Table I3 will confirm. This has been due partly to the past requirements of society for the administrative and managerial skills not easily available outside the university. It has also been due to the desire to give such training social status and intellectual prestige.

Next comes the role of the university in advancing the frontiers of knowledge. Here it is admitted that first-class creative minds are difficult to come by, and that they may get better job satisfaction working in well-equipped laboratories and libraries elsewhere without the commitment to undergraduate teaching. It is also admitted that there is much to be said for the view that research may be better done outside the university, away from the distractions of teaching and with the necessary equipment provided by a parent body which expects to profit from the results and is therefore prepared to spend.

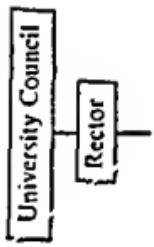
It is often stated that teaching should be combined with research, although it is not clear why this should be so. If teaching through research is a good way of teaching, it is surprising that it is not being applied more widely outside the university. In fact, teaching through research may be a very inefficient way of teaching, if the idea is to convey to the students all the facts and concepts he needs to know as well as an educated grasp of the whole principle and purpose of the subject and its relation to the world of learning as a whole.

Again, some agree that it is futile to keep up the pretence that university academics are advancing the frontiers of knowledge, when not enough of them are doing so. As a result, a shift of government emphasis away from university research towards the establishment of such separate research institutes as the Applied Scientific Research Corporation of Thailand (ASRCT) has been welcomed.

Those opposed to university research do not want to see research dropped from universities' programme of work. On the

CHART 1

ORGANIZATION OF CHULALONGKORN
UNIVERSITY



Central Administration—	Faculties (Dean)	Institute (Director)	Affiliated Institutions
Secretary General	Graduate School	Institute of Population Studies	Institutions (Director)
Academic Affairs Division—Vice- Rector for Academic Affairs	Architecture Arts	Institute of Social Research	School Analytical Chemistry
Planning and Development Division—Vice-Rector for Planning and Development	Commerce and Accountancy Arts	Institute of Health Research	Training
Student Affairs Division—Vice-Rector for Student Affairs	Communication Arts	Institute of Environmental Research	Red Cross College
Property Management Division—Vice-Rector for Property Management	Dentistry Economics Education Law Medicine	Institute of Nursing	
	Pharmaceutical Science		
	Political Science		
	Science		
	Veterinary Science		

to cultivate and promote aesthetic and moralistic value of such among university students and the public.

It could be said that the new formulation also reflects the trend of the current debate and that it is more utilitarian in orientation.

Organizational and administrative structure

Chulalongkorn University is a government unit under the jurisdiction of the State Universities' Office located within the Office of the Prime Minister. All regular staff members are thus government servants and on the civil service payroll. Day-to-day business is run by the Rector who is under the general supervision of the university Council and assisted by advisory units and Vice-Rectors. The accompanying Charts 1 and 2 are self-explanatory.

Financial support through the government budget constitutes the major part, roughly between 91 and 94 per cent (as can be seen from Table 11), while the remainder is derived from fees and property income. As far as property goes, Chulalongkorn is unique in its ownership of a valuable piece of land.

The crucial question about the organizational and administrative structure of a university is whether or not it is efficient. Efficiency can be judged in terms of whether or not it can respond to demands from all sections of the university without undue delay. An ability to respond promptly to demands for, say, a change in the curriculum normally implies efficient decision-making. Efficiency can also be thought of in terms of ability to implement decisions and to supervise such implementation. On the whole, Chulalongkorn University's record in respect of efficiency appears to have been good.

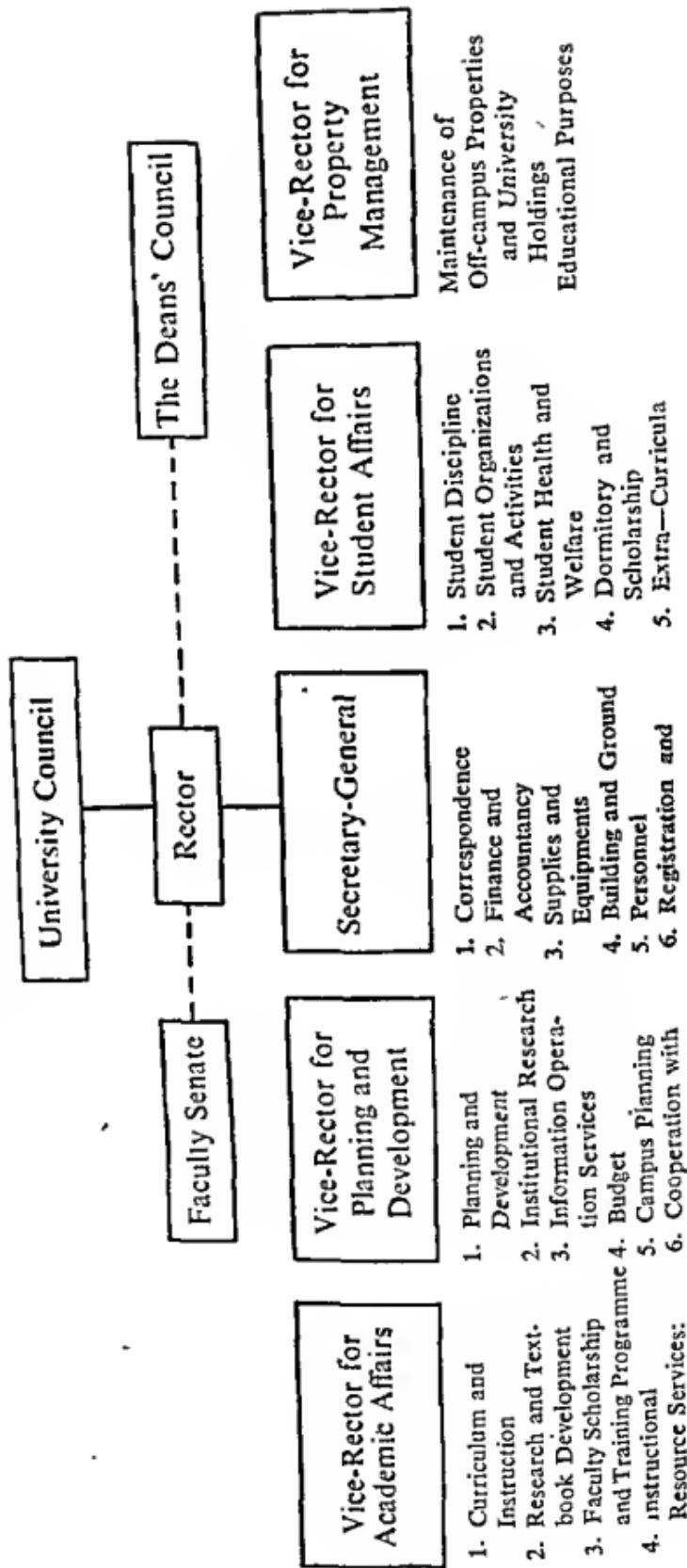
Quite apart from the question of such administrative efficiency, economic efficiency is also involved. External economic efficiency is indicated by the extent to which the supply of educational output matches the demand, and internal economic efficiency by the input-output ratio and also by the quality of output. Both aspects of economic efficiency will be touched upon when specific disciplines are treated.

Efficiency apart, the organizational and administrative structure should be such as to render a university autonomous. On the whole, with the advent of the State Universities' Office, which serves largely as a liaison office between the university and the government, direct pressure brought to bear upon universities

		Projects
Central Library,	other Institutions	Statistics
Central Audio-Visual	7. Coordination with	7. Public Relations
Services, Thailand.	Foreign	8. Staff Welfare
Information Centre	Organizations	

CHART 2

CHULALONGKORN UNIVERSITY
ORGANIZATION STRUCTURE OF THE
OFFICE OF THE RECTOR



(4) The new Act does not allow a person to hold two concurrent posts for an extended period. According to current practice, an academic can be both a Dean and a Department Head at the same time, while in the new Act such concurrent holding of posts cannot last for more than six months.

(5) While the Faculty Senate (Council of Academics) at the moment has such status as the University may wish to give it, under the new Act, it is recognized as a body representing the corps of university-wide academics.

(6) Under the new Act, any full-time academic staff member can be elected Dean of a Faculty, while, according to current legislation, only Department Heads can be candidates for Deanship.

(7) Under the new Act, the post of University Secretary-General, who occupies a key role in university administrative machinery, is abolished.

The new Act has been drafted by the Faculty Senate which feels that it represents a more democratic approach to the management of the university.

As in the case of the search for effective guiding values, the new Chulalongkorn Act is not expected to be the final shape of things to come; for things are very much in a state of flux. On the one hand, continuous consultation is taking place on how best to reform the existing national university system, and, on the other, a broader framework for educational reform is being worked out.

It is recognized that the administrative structure of a university has to meet the two requirements of autonomy and academic freedom, which, it is felt, are not being favoured by the existing state of things. The Office of State Universities and the University Development Commission have therefore joined forces in organizing a series of consultation sessions among top university administrators. The sessions held in June 1976, while they did not arrive at conclusive findings, indicated the direction of change to come. For instance, it urged a University Council to concern itself with policy matters while leaving details of implementation to other university organs. Again, it considered the merits and demerits of making all offices elective and felt that some posts might be filled by appointment. The impact of all such findings would seem to make the new Chulalongkorn University Act but a provisional one.

Moreover, at the national level the Committee for Establishing the Framework for Educational Reform in its report on *Education*

tends to have been averted.

Such organizational and administrative structure of Chulalongkorn as has been described is not expected to last, since a new Act of Parliament which is the basis of a new structure is soon to be enacted. It will be the eighth act in the series which began in 1943.

Indeed, while the debate on the guiding values of the university or the *ends* for which it exists has run its course, increasing attention has been paid to the question of its administrative structure or the *means* to the desired ends.

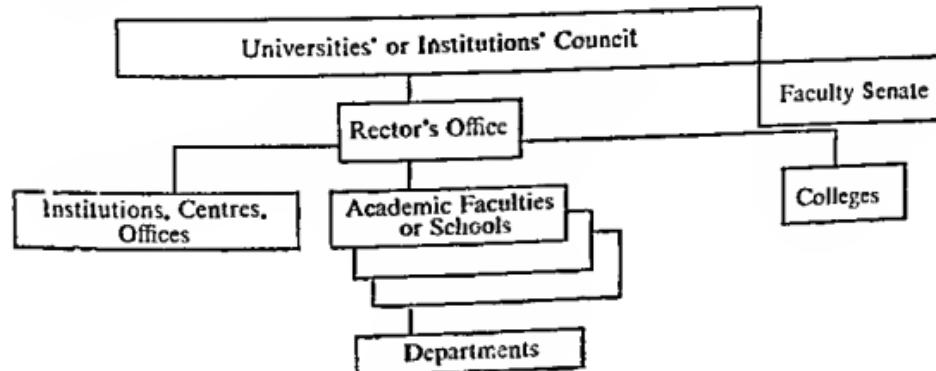
There are seven salient features of the forthcoming Chulalongkorn University Act.

(1) The composition of the University Council, which is the university's supreme governing body, will be changed. According to current legislation, the Council is composed of 30 members, 6 of whom are from the Rector's office (the Rector, 4 Vice-Rectors and the Secretary-General) and 15 of whom are from the administration of the 15 Faculties, leaving the remaining 9 seats to be filled by independent outsiders. Under the new Act, there will be only 27 members, to be drawn equally from three groups, namely, university administration, academic staff and "qualified" members who could be independent outsiders.

(2) The process whereby membership of the Council is gained will be changed by the new Act. According to prevailing practice, the 21 university administrators have, so to speak, *ex-officio* seats in the Council, and they, in turn, nominate independent outsiders. The new Act envisages different processes. The 9 university administrators are chosen from among all the university administrators and the 9 members from academic staff are elected from among the 1,800-strong permanent academic staff. The two groups of university administrators and academic staff, in turn, elect the 9 'qualified' members.

(3) The term of office of university administrators will be changed by the new Act. According to present legislation, the term of office for most university administrators is 4 years, and the incumbents are eligible for re-election. On the other hand, new legislation makes membership in the University Council last for only two years, though members are eligible for re-election. Again, university administrators like the Rector, a Dean or a Department Head have a four-year term, though the incumbent cannot serve for more than two consecutive terms.

In order to achieve such objectives, the following structure of the internal administrative units within the universities is recommended:



In the same report it is also recommended that:

2.5 The State should follow the targets set to ensure that higher learning institutions become fully autonomous and out of the civil service system. The later stages of the Third Educational Development Plan and the early stages of the Fourth Plan should provide sufficient transitional period for higher education institutions to phase out of the civil service system. During the Fifth Plan these institutions should be fully autonomous. Coordinating agencies working closely between the State and universities should be transformed into the Universities Grants Commission.

As far as the report goes, further structural change can be seen in the offing, since the recommended structure differs in many ways from that envisaged in the new Chulalongkorn University Act. The University Council is to be more representative of a wider cross-section of society, and even administrative personnel will have a say in it. Increased opportunity for teaching staff to participate in administration, through the Faculty Senate and as well as through a system of rotation, perhaps goes beyond the provisions of the forthcoming Chulalongkorn University Act. Most important of all is the phasing-out plan for the university to become fully autonomous and no longer part and parcel of the civil service system.

Within university circles, the reaction is a mixed one. Some welcome more active and fuller participation of staff in administration as being a more democratic way of running a university, while

for Life and Society already quoted has the following to say on the internal administration of a university:

"The present internal administrative system which highlights the significance of self ruling on a committee basis should be regarded most appropriate for the nature of higher education. The direction towards internal administrative reform, therefore, aims at improving the structure and work-flow within the system based on the following principles:

(1) Maintain the structure where groups of individuals or committees play vital roles in internal administration in universities.

(2) Set standard for establishing internal organizational units to promote harmonization and mutual understanding among higher educational institutions themselves and also for external agencies. Such divisions are for example schools or faculties, departments, institutes, centres, and colleges, etc.

(3) The University Council which has the most authority in higher learning institutions should consist of individuals drawn from various agencies involved in higher education both internal and external. Those representing various interested groups that should sit in a university council should be proportionately drawn and selected from the administrative personnel, teaching staff, alumni, qualified or experienced people from other sectors and other academicians of various disciplines.

(4) Regular teaching staff should have more participation in the internal administration. This is possibly implemented by recognizing the Faculty Senate as the subcommittee of the University Council empowered to implement assigned duties such as the formulation of academic standards, academic ethics and teaching ethics of the staff; the establishment of criteria for academic positions and the setting of guidelines for various student activities etc.

(5) Increasing opportunity should be provided for regular teaching staff to rotate in the administrative capacity as departmental chairman, dean, vice-rector and rector. Administrative positions with appropriate tenure should be stipulated, and qualified personnel should be selected to fill in the positions on the basis of democratic votes by all regular teaching staff members.

(6) The business and para-academic system should be considerably improved in terms of efficiency by properly designing divisions and assigning manpower appropriate to the characteristics of higher education."

TABLE 14. Some Basic Statistics
Chulalongkorn University, Academic Year 1974

University, Faculty or Department	Enrolment Number	Number of Graduates	Number of Academic Staff	Staff Members	Student Ratio	Budgetary Appropriations (million baht)	Budgetary per head of Student (baht)
Chulalongkorn (Total)	15,904	3,564	2,388	1:7	142.7	8,972	
Faculty of Education	2,102	441	312	1:7	12.4	5,899	
Faculty of Dentistry	283	63	136	1:2	10.1	35,689	
Faculty of Law	573	117	43	1:13	1.7	2,960	
Faculty of Commerce and Accountancy	1,812	495	176	1:10	5.7	3,145	
Faculty of Medicine	443	216	335	1:1.3	29.4	66,365	
Faculty of Pharmacy	335	102	99	1:3	5.1	15,224	
Faculty of Political Science	718	159	67	1:11	3.7	5,153	
Faculty of Science	1,859	261	408	1:5	25.1	13,501	
Department of Chemistry	86	32	49	1:2	—	—	
Faculty of Engineering	1,847	439	196	1:9	13.8	7,472	
Department of Civil Engineering	201	143	26	1:8	—	—	
Faculty of Economics	428	81	62	1:7	3.6	8,411	
Faculty of Architecture	431	154	72	1:6	3.5	8,120	
Faculty of Veterinary Science	173	30	47	1:4	4.1	23,699	
Faculty of Arts	870	217	212	1:4	10.4	11,954	
History	—	—	9	—	—	—	
Faculty of Communication Arts	546	104	61	1:9	2.4	4,395	

others feel that if academics are obsessed with university politics and elections the real job of a university, that is teaching and research, will not get done. According to the latter school of thought, participatory democracy assumes that society can dispose of some leisure which the Athenians, on whose ancient experiment the model has been based, did have, while academics today, if they are to be worth their salt, are compelled to keep up with and contribute to what goes on in their particular field. With electioneering going on all the time the latter school feels that university standards will go down.

Again, the proposal to break away from the civil service system has been received with mixed feelings. Some feel that only in the new set-up can there be true autonomy, while others fear that being cut loose from the civil service system amounts to abandoning such fringe benefits as civil servants do enjoy and being left in the wilderness to fend for themselves.

Disciplinary structure

Table 14 attempts to give a bird's-eye view of the relative strength of various disciplines in the total set-up of Chulalongkorn University, where disciplines are organized either at the Faculty or Department level.

In terms of enrolment, the top rank goes to Graduate Studies, followed by Education, Science, Engineering and Commerce which, between them had the total enrolment of 11,010 or 70 per cent of the University total in academic year 1974.

In terms of output of graduates the pattern observed in enrolment emerges: Graduate Studies, Education, Commerce, Science and Engineering turned out 2,280 graduates or 64 per cent of the university total in academic year 1974.

When attention is turned to academic staff strength the pattern is different from that observed for enrolment and output of graduates. Medicine and related disciplines and Arts emerged as disciplines with considerable staff strength, in addition to those already observed to have been strong in enrolment and graduate output. Surprisingly enough, Graduate Studies were poorly endowed with academic staff resources.

The overall staff-student ratio of 1:7 was not bad. The medical group of disciplines were doing well with a staff-student ratio of between 1:1.3 for Medicine and 1:3 for Pharmacy. Graduate

TABLE 15. Chulalongkorn Students and Graduates by Discipline
Academic Year 1974

<i>Discipline</i>	<i>No. of Students</i>	<i>As % of national total</i>	<i>No. of Graduates</i>	<i>As % of national total</i>
<i>All Disciplines</i>	15,904	21.08	3,594	20.32
Humanities	1,801	33.78	382	37.05
Education	3,151	10.93	812	11.68
Fine Arts	455	31.81	154	43.50
Social Sciences	3,687	30.00	826	25.70
Law	713	16.40	123	9.96
Sciences	1,449	32.64	348	59.91
Engineering	2,306	33.52	516	37.96
Medical Science	1,974	24.07	541	29.03
Agriculture	173	4.68	30	3.73

SOURCE: Office of State Universities.

Studies, with a staff-student ratio of about 1:30 seem to have been in serious trouble.

An examination of total resources committed per student is revealing. The medical group of disciplines, in line with staff strength, commit more resources per head of student than others. The value of such resources per head varies from 66,305 baht (US \$3,188) for Medicine to 15,224 baht (US \$732) for Pharmacy. Outside the medical areas, Science, Arts, Economics, Architecture and Engineering did better than Commerce or Law. Again, Graduate Studies were at the bottom rung.

The disciplinary break-down of Chulalongkorn academic pursuits are better seen in Table 15 where the Unesco system of classification is used instead of the Faculty-wise or Departmental break-down adopted in Table 14. In terms of its share of output of graduates in academic year 1974 Chulalongkorn was strongest in sciences, which were followed by fine arts, engineering, the humanities, medical science and social sciences, while its role in turning out graduates in education, law, and agriculture was relatively unimportant. When student enrolment is looked at, however, the picture can be seen to have been somewhat different. The humanities, fine arts, sciences and engineering seem to have been to equal importance. Medical science may have lost ground while law was improving its relative national importance. Education and agriculture still have negligible national roles. If enrolment can serve as

3 The University's Contribution toward National Development

Humanities

The humanities, especially Arts, at Chulalongkorn have had an interesting history, and, as can be seen from Table 16, Arts constitute the preponderant component of the humanities at this university. Arts began to be taught at the University in 1918, a year after the university's foundation. This could be said to be the first time the humanities were taught in Thailand, and they were meant chiefly to prepare doctors and pharmacists. In other words, while, as a trainer of skills, the university was teaching Medicine and Pharmacy, as a healer of culture, it was teaching the Humanities.

TABLE 16. *Chulalongkorn Students and Graduates in Humanities,
Academic Year 1974*

Discipline	No. of Students		No. of Graduates ¹	
	Under-graduates	Post-graduates	First Degrees	Higher Degrees
Arts	870	—	217	—
Mass Communications and Public Relations	296	—	—	—
Mass Communications	135	—	53	—
Public Relations	115	—	51	24
Library Science	—	85	—	16
History	—	93	—	12
Thai	—	50	—	—
French	—	24	—	6
English	—	30	—	1
Philosophy	—	56	—	2
Pali-Sanskrit	—	30	—	—
Comparative Literature	—	11	—	—
German	—	6	—	—

¹Early in 1974.

SOURCE: Office of State Universities.

any pattern of graduate output in the future, it can be said that the present predominant role of Chulalongkorn in turning out graduates in sciences, fine arts, engineering and the humanities will probably be preserved, though the national importance of Chulalongkorn graduates in Sciences will probably decline.

The disciplinary structure of Chulalongkorn being what it is, the decision to look at only the humanities, sciences, engineering and social sciences in our case study will not entail overlooking anything of national importance other than Fine Arts and, to a lesser extent, medical science.

guides to fit to requirements of the Tourist Organization of Thailand.

History was recognized early on as part and parcel of the humanities at Chulalongkorn. When, in 1923, students of medicine, pharmacy, sciences and engineering was being admitted for the first time, history was taught as part of their "special" subjects. Again, when it came to training teachers in the crash programme of 1928, history was also included.

The curriculum with specialization in history of Chulalongkorn at the undergraduate level did not exist until 1971. Before 1971 Arts undergraduates took history as one of the principal subjects of the Arts curriculum, based largely on the London University model. Thus, many of the Arts graduates from Chulalongkorn who still constitute the majority of the Arts teachers and educational administrators took history along with languages or mathematics. So far educational statistics have not shown the number of Chulalongkorn Arts graduates according to the system of specialization in history, which has been adopted in most other universities.

TABLE 17. Chulalongkorn University's History Staff Academic Year 1974

Countries of Terminal Training	Higher Degree Obtained				Total
	Bachelor's	Master's	Dactarate's		
United States	—	3	1		4
France	—	—	2		2
United Kingdom	—	—	1		1
Thailand	—	2	—		2
Total	—	5	4		9

SOURCE: Department of History, Chulalongkorn University.

The full-time staff in History, a Department within the Faculty of Arts, consisted of four Ph.D. and four M.A. holders during the 1974 academic year. Four were trained in the United States, three in Europe and two locally, and thus a variety of historical approaches is ensured. Its curriculum covers Asian as well as Western history and aims at giving an awareness of economic, social and political development of Thailand and its neighbours in Asia and South-East Asia. There is an obvious emphasis on Thai economic, social and political history which serves well to give students a time

Five years later, in 1923, the Humanities became part and parcel of the curriculum for pharmacy, medicine, sciences and engineering. In 1928, eleven years after the university's foundation, the humanities were incorporated into a crash programme for training of teachers to meet the particular requirements of the Ministry of Education. Important elements in them were Thai, Pali, English, French, German, history, geography, ethics and mathematics. It was only after the Second World War, that graduate studies in the humanities were introduced.

The humanities thus established themselves early in Thailand as part of the general education for specialists and teachers. Indeed, Chulalongkorn University monopolized the output of graduates of Arts between the early 1920s and the early 1960s or during something like forty years. Of the flow of 2,537 Chulalongkorn Arts graduates up to academic year 1966 so many have established themselves in schools all over the country that existing Arts graduates are assumed to have come from Chulalongkorn. Inroads began to be made into Chulalongkorn's monopolistic position when, in 1962, Thammasat University founded its Faculty of Liberal Arts. Be that as it may, Chulalongkorn University's predominant role in turning out Arts graduates persists. As late as in academic year 1974, of the total Arts graduates of 1,064,870 or 81.77 per cent came from Chulalongkorn.

As a healer of culture, Chulalongkorn is one of the few places which offer Thai Language and Literature and ancient oriental languages which enable students to delve into the country's cultural past and forms the basis of an understanding of its contemporary culture. As a trainer of skills, the university is also among the few offering courses in mass communications, public relations and library sciences.

The humanities also have a time-honoured tradition of helping Chulalongkorn to perform its function as a service agency. The crash programme for the training of teachers launched in 1928 has already been referred to. Since 1964, Malay has been taught to government officials destined for work in some Malay-speaking Southern provinces. Thai is also being taught to non-Thai speakers including those coming under the American Peace Corps Programme as a regular public service. Similarly, special courses for teachers of French have been organized along with the training of official tourist

historical perspective of current development problems of Thailand. A past coup d'état, a dispute between a provincial governor and foreign subjects and the navy in an absolute monarchy were some of the topics treated by politically-oriented theses, while taxation, government expenditure and European role in railway construction were the major concerns of economically-oriented ones.

Generation of knowledge by members of the History Department is equally impressive. To take academic year 1973 as an example, university research funds were awarded to them for research on economic and political aspects of development.

Despite its small size, the Department is active in public affairs.

TABLE 19. Chulalongkorn Students and Graduates in Social Sciences and Law Academic Year 1974

Discipline	No. of Students		No. of Graduates ¹	
	Under-graduates	Post-graduates	First Degrees	Higher Degrees
Accounting	391	107	168	18
Economics	333	11	81	—
Commerce and Accountancy	708	—	73	—
Commerce	175	—	60	6
Statistics	338	82	9	—
Industry	—	—	—	—
Political Science	169	—	70	27
Government	214	186	18	3
International Relations	57	39	66	—
Public Administration	226	—	—	—
Economic Theory	7	4	—	—
Economic Development	2	9	—	—
International Economics	24	17	—	—
Monetary Economics and Public Finance	50	30	—	—
Quantitative Economics	12	73	—	—
Costing	—	40	84	—
Banking and Finance	—	45	—	101
Auditing	—	69	—	28
Marketing	—	85	—	2
Sociology	—	94	5	—
Sociology and Anthropology	52	—	2	3
Demography	—	38	—	6
Law	573	140	117	—

¹Early in 1974.

SOURCE: Office of State Universities.

dimension of the development of their society in relation to its neighbours. The Department seems to be performing its dissemination function adequately.

TABLE 18. *Graduate in History 1974*

<i>University</i>	<i>First Degree</i>	<i>Higher Degree</i>
Chulalongkorn	—	16
Chiengmai	12	—
Thammasat	17	—

SOURCE: Office of State Universities.

As compared to the number of Chulalongkorn Arts graduates (many of whom have taken history as part of the Arts curriculum) the number of graduates specializing in history in Table 18 is small. Presumably, the bulk of locally-trained historians still come from Chulalongkorn.

Of the flow of 2,537 Chulalongkorn Arts graduates to academic year 1966, those who took history have taken up various occupations. The majority are in the Ministry of Education, first as teachers and later on as educational administrators. In fact, several senior administrators in the Ministry of Education are from the history stream of the Chulalongkorn Arts curriculum. At least one of those graduates has become an independent researcher, and has earned a wide reputation as a specialist in Thai history. There is no question that all such graduates have, in various ways, contributed to national development.

More recently, the question of employment of historians has attracted attention. According to the survey conducted early in 1975 by the Office of State Universities only half of Chiengmai history graduates could find employment with the government while the remaining half was unemployed. On the other hand, in the case of Thammasat 70 per cent could find employment largely within the private sector, the rate of employment being 30 per cent.

At the post-graduate level, under the jurisdiction of the Graduate School, in 1974 there was an output of 16 graduates. A glance at the list of the 8 theses submitted by such graduates in 1974 gives the impression that a great deal of useful knowledge is being generated at this level. The orientation is largely political and economic and shows, on the part of post-graduate students, an awareness of the

ment. This means that a "core" discipline, which may be political science, or law, or public administration, is developed first, and once a strong faculty or department has been built up, work can start on other disciplines. In a sense, each step in this pattern builds upon previous ones so that a strong set of faculties or departments should eventually emerge. On the other hand, universities and other institutions of tertiary education brought into existence in the 1960s seem to have adopted a strategy of "frontal attack" so that the whole gamut of the social sciences is introduced at one go. For instance, Chiengmai (founded in 1964) has a Faculty of Social Sciences. Perhaps this has been adopted to counter-balance the preponderance of science and technology on which new universities appear to concentrate.

New institutions dealing with the social sciences have been set up explicitly in response to increased social needs. It is sometimes felt that existing units have either reached their optimum size or are immobilized by their tradition-bound structure. Fear of wasteful competition is sometimes openly expressed, but, on the whole, the advantages of healthy competition are believed to outweigh possible waste. Where it is felt that increased social needs have to be urgently met efforts are concentrated on a discipline or a group of related disciplines. It is not surprising, therefore, to find some institutions of tertiary education devoted almost entirely to the social sciences, or, for that matter, the medical sciences. Attempts have, however, been made to modify the structure conditioned by the exigencies of history.

It is perhaps not out of place to discuss here the merits and demerits of the two patterns of development. Both are clearly flexible. The chief advantage of the strategy of "gradualism" is that a core subject exists as a rallying force. This, however, is valid only on paper. A core subject, as well as its "satellite" disciplines, is developed first in a faculty, a university division which is believed to be modelled after its European prototype. Sooner or later the "satellite" disciplines naturally claim a faculty status of their own in much the same way as small social groups in a country may clamour for statehood. This may not always be possible. Moreover, once fully-fledged disciplines have happily or unhappily been granted faculty status, it is unlikely that they will develop in step with one another, faculties being generally empires in their own right. Therefore, there can be no guarantee of healthy and balanced

Social Sciences.

The development of the social sciences in Thailand has been closely bound up with the pragmatic considerations of government. Even before Chulalongkorn, the country's first university, was founded just before the end of the First World War, the demands of government had dictated the organization of instruction in the social sciences, though only a restricted group of people had direct access to it. An In-service Training Institute for Civil Servants was founded in 1899, and it adopted a social science approach. It later became the Royal Pages' School. In the initial stages, no formal distinction was made between political science and law, the emphasis of the one being on the science of government and of the other on instruments of government. Once Chulalongkorn had been founded, the two disciplines went hand in hand. In fact, the Faculty of State Administration came into being with the university's foundation, and in 1933 it became the Faculty of Law and Political Science. It is not clear whether political science was woven round law or the other way round; but there was certainly no doubt about the reality of political science in the minds of its practitioners.

In the subsequent foundation of other universities, the crucial role of the social sciences in several aspects of governments was not overlooked. If anything, their importance has perhaps been over-emphasized in public with the deliberate intention of rallying support for social science faculties, departments or projects. This is to be expected in a country where universities are State-owned and State-run institutions, which depend almost entirely on the government for their finances, as has been pointed out earlier. That the social sciences have been able to rally public and government support does not, however, mean that they are fully understood or have been firmly implanted. This sometimes entails unpleasant consequences for practitioners. The apparent simplicity of terms used in the social sciences as opposed to those employed in the physical and natural sciences tends to mislead certain people into thinking that they have come to grips with them, which leads to frequent attempts to interfere with such technical processes as curriculum formulation.

When the establishment of instruction in the social sciences is examined in retrospect, two distinct patterns seem to emerge. Universities which came into existence in the first half of the present century appear to have followed a pattern of piecemeal develop-

formal that, for instance, attention was concentrated on the provisions of constitution rather than on its actual workings.

More recent developments have, fortunately, broadened and "liberated" social science curricula. It has become increasingly clear that potential employers of social science graduates are to be found in the private sector as well as the government. Increased attention has therefore been paid to theoretical aspects as well as the possible requirements of the private sector. For instance, political theory has come to play a key role in a political science curriculum. With the rapid development of sociology and anthropology, excessive formalism in political science has been toned down by approaches through political sociology.

The advent of the behavioural approach has split social scientists in Thailand into two opposing camps. To the traditionalists, the correct tactics for social science is the introspective study of the mind rather than the observation of external behaviour. Advocates of the new approach, on the other hand, find it a great stimulus for research. Their controversy has not, however, wrecked the universities; for both schools of thought are found within them and their members accept the motto of peaceful co-existence. In all fairness to the new school, it must be pointed out that the recent bumper crop of research projects in the country, whatever one may think of them, has been due largely to its efforts.

After about 80 years of development, the stock of graduates in the social sciences from institutions of tertiary education at the end of 1966 stood at 19,514, which represents about 42 per cent of the total stock of graduates from institutions of tertiary education, at the time. Table 20 gives a discipline-by-discipline breakdown.

The preponderance of graduates in commerce and accountancy is due largely to the growing needs of the private sector. Apart from such vocational training which is also widely dispensed by non-university institutions, the important role of graduates in law, political science and economics is to be noted. Indeed, graduates in law and political science have traditionally constituted the backbone of the civil service.

The 1966 figure for the apparent stock of social science graduates must not, however, be taken at its face value. First, account must be taken of substantial attrition by death and retirement. For instance, a number of graduates of 1888 must have reached their retirement age by the late twenties. Some may not have survived that long.

development of the social sciences through the strategy of gradualism. On the other hand, the philosophy of "frontal attack" is not without its attraction. The development of the social sciences in one faculty ensures that they are always viewed *in toto* though strong department heads may succeed in getting development in one direction to the detriment of the other disciplines. Yet, deans acting as true arbiters should see to it that this does not happen. Nevertheless, there are some difficulties with this approach. Without a core subject upon which a Social Science faculty can gradually build, unnecessary dispersal and diffusion of efforts are likely to appear. This, of course, is not a serious matter if, to start with, the faculty is fully staffed. A more formidable practical difficulty, in our present administrative set-up, is that there are no proper channels allowing the constituent departments to develop. For instance, an economics department in a new university finds it hard to compete with a more prestigious economics faculty elsewhere for government financial resources. In other words, whether a social science discipline is organized as a constituent department within an all-embracing social science faculty or as an isolated faculty is not merely a matter of terminology or expediency, but can be a decisive factor in the subsequent development of the discipline.

Eventually, a solution will have to be found for the difficulties inherent in both strategies of development, which are, incidentally, peculiar to the social sciences. For instance, while no one will dream of proposing a faculty of chemistry as a separate entity, a faculty of political science is accepted as a matter of course, at any rate in the older universities. Perhaps, a solution may have to be found in the appointment of a Deputy Rector for the Social Sciences, who can co-ordinate development in the various social sciences in the older universities. Likewise, departments in new universities may have to be recognized as being equivalent to faculties, once they have become fully-fledged.

Related to patterns of development is the question of curriculum content. Curriculum content has from time to time been determined by the exigencies of history. Early courses were designed with the pragmatic purposes of government in mind, and there was a close connexion between political science, law and public administration. Questions of political theory thus played a minor role in the initial stages. Moreover, political science and law interacted with each other. Indeed, at one stage the approach to political science was so

and the Far East, 1965, pp. 93-94, Bangkok, 1966), subjects other than the "natural and applied sciences group" (Natural sciences, engineering, medicine and agriculture) are lumped together under the heading of "humanities, education, fine arts, law, social sciences," in which graduates in Thailand in 1974 accounted for about 73 per cent of the total output of graduates. It submits that the preponderance of the humanities and related groups of subjects has been due, on the demand side, to "the preference which parents and children have shown for white-collar jobs" and on the supply side to, "the greater ease with which . . . the facilities for studying the humanities at the third level can be expanded when there is strong political pressure to provide additional places." This is unfortunate, or so it (the report) maintains.

It might be argued that it is not education *per se* which contributes to economic development but rather education of a particular type. Some types of education may impede technical change, or oppose the social change that necessarily accompanies it, by providing too great an indoctrination in past literary and religious treasures or by confirming social, political and cultural prejudices. In general, however, an expansion in the educational system will assist economic development by improving literacy and the ability to read technical instructions and other reading material, by providing the basic knowledge to facilitate further learning, and by increasing receptivity to change.

While the quoted passage makes good sense, it is doubtful whether economic and social development is a matter of technical change alone. Science and technology certainly have a leading role to play in the process; but what is crucial is how to get the average person in developing countries to accept changes introduced by the application of science and technology. The task could be properly entrusted to graduates in the social sciences and related fields, although it is difficult to estimate exactly how many social scientists per scientist or technologist are required. The social sciences can thus turn the university into an agent of social change and thereby contribute to development.

Of course, the possible impact of the social sciences depends on the quality of work done and its analysis of society. Some foreign observers may have a poor opinion of the work done so far in

TABLE 20. *Number of Social Science Graduates¹ in Thailand distributed by disciplines (1888-66)*

<i>Discipline</i>	<i>Number</i>	<i>Discipline</i>	<i>Number</i>
Political Science	2,333	Economics and business administration	2,222
Social administration	1,272	Public administration	138
Journalism	91	Law	5,756
Commerce and accountancy	7,702		

¹A total of 19,514 graduates.

SOURCE: Office of the National Education Council, *Statistical Report, Institutions of Higher Education, Thailand; 1967*, Bangkok 1968, Table 11, pp. 46-47.

There is no telling how large such attrition was; but it must have taken its toll in other disciplines like law and political science. Secondly, there is "immigration," which must have been quite significant in view of the fact that a number of social scientists in the country have had their education abroad. Finally, there is emigration, which, on the whole, has not been a strong force in the social sciences. In the absence of a new survey of the stock of social scientists, one can only use some dull statistics and dabble in conjecture.

The current output of graduates may give a fair indication of the current stock of social scientists. For instance, in academic year 1973, out of a total of 17,539 graduates from institutions of higher education, 4,447 or about 25.4 per cent, were in the social sciences including law.

Enrolment in the social sciences was indeed larger by comparison. Thus in the academic year 1974, out of total enrolment of 75,432 in institutions of higher learning, 16,633 or about 22.1 per cent were in the social sciences. If anything can be read into enrolment, it can probably be taken to mean that graduates in the social sciences will in future be turned out at a lower rate than in other academic disciplines.

In fact, the relative numerical importance of social scientists seems to be on the decline.

Table 19 gives an idea of Cbulalongkorn's role in turning out social scientists, and the preponderant role of commerce and accountancy is to be noted.

In an ECAFE report (United Nations, *Economic Survey of Asia*

too close a relationship to the substance of courses leading to them, though they appear to have in common the primary aim of training professional economists to meet the particular needs of the public sector as well as the private one. In fact, degrees appear to be named according to the particular role that the department or faculty concerned plays in the over-all framework of a university. For instance, there may have been little real difference between the Thammasat degree in Economics and the Chulalongkorn one a Political Science with specialization in Financial Administration, though the latter is so named because it originated from a faculty responsible for training political scientists.

Substantial differences can be found as a result of differences in the general framework of the university or faculty into which the economics curricula have to fit. With divergency in background and historical development, the four universities concerned may not look at the training of economists in the same light. For instance, Kasetsart University being primarily meant to meet the needs of agriculture, its economics curricula have to embody such subjects from the natural and physical sciences as chemistry, physics and biology. Similarly, at Thammasat University the first year of an economics student is devoted in its entirety to "Liberal Arts" subjects, since Thammasat has been reorganized in such a way as to allow "general" education to play its full role. Again, the economics curriculum at the Faculty of Commerce and Accountancy, Chulalongkorn University, had to make room for a certain amount of basic knowledge about commerce imparted through such courses as General Commercial Knowledge, and Introduction to the Legal System.

A survey of economics teaching conducted in 1965 revealed the following common features, which still prevail:

First, it seems to be clear that while all the significant branches of economics are covered in the curricula, training of professional economists has not been sufficiently intensive. Take, for instance, the second year of a faculty, where only 13 per cent of lecture hours available is devoted to economic principles (18 per cent if economic geography and economic history are included in the "economics group"). This lack of intensive training is due partly to the encroachments of other subjects and to be low efficiency of the existing teaching method. There is little utility to be gained from other subjects, unless they are suitably combined with "core" economics.

Thailand by social scientists. Jacques Amyot (*Changing Patterns of Social Structure in Thailand 1851-65: The Sources Comments and Evaluation*, p. 13, Bangkok, 1968) has the following to say:

Studies by professional behavioural scientists on the social organization of Thailand are a fairly recent occurrence. Earlier accounts are by missionaries, diplomats, travellers, and the like, invariably scholars in other fields. The best of these are very useful and contain a wealth of information by intelligent and objective observers. One does not and cannot reasonably expect to find in them the scientific rigour of a trained scientist. The writers describe what they see and what they are interested in. There is little concern for sociological explanation. Generalizations are made from limited observation and relevant data are not always provided. Some writers are specialists in fields such as politics, education, or economics and are interested in social structure only tangentially. Their studies generally disappoint sociologists and social anthropologists.

Economics has been taught in Thailand since an In-Service Training Institutes for Civil Servants was founded in 1899. As part of general education, Economics has been used in the training of such people as future architects, men of letters, engineers and scientists.

The training of professional economists at the undergraduate level is undertaken by four universities, namely, Thammasat, Kasetsart, Chulalongkorn and Chiangmai. The Faculty of Economics of Thammasat University offers courses leading to the degree of Bachelor of Economics, while the Faculty of Economics and Business Administration at Kasetsart University confers the degree of Bachelor of Science with possible specialization in agricultural economic, cooperative science, economics, business Administration or accounting. In Chulalongkorn University professional economists were trained both at the Faculty of Political Science and the Faculty of Commerce and Accountancy: the Faculty of Political Science awarded the degree of Bachelor of Political Science with specialization in financial administration, while the Faculty of Commerce and Accountancy had courses leading to the degree of Bachelor of Economics. Since 1970, however, Economics at Chulalongkorn has had a Faculty of its own.

In fact, official designations of economics degrees may not bear

Chulalongkorn University, Thailand

TABLE 21. Number of Full-time Economics Teaching Staff by Qualifications, Thailand Academic Year 1973

University	With Doctorate's Degrees	With Master's Degrees	With Post-graduate Degrees	With Bachelor's Degrees	With Lower Qualifications	Total
Chulalongkorn	5	31	—	12	—	48
Kasetsart	9	39	6	20	—	74
Thammasat	5	51	—	35	—	91
NIDA	5	7	—	—	—	12

SOURCE: Office of State Universities, Thailand.

TABLE 22. Resources Devoted to Economics Teaching and Research in Thailand Fiscal Years 1972 and 1973 (US\$)

University	Normal Operations and Capital Expenses			Research Support	
	1972		1973	1972	1973
	Total	Per Head of Staff	1973		
Chulalongkorn	230,125	287,701	6,035	790	—
Thammasat	277,740	312,505	3,434	—	42,500
NIDA	61,188	64,379	5,365	4,013	2,434
Kasetsart	157,322	169,288	2,288	1,920	15,842

SOURCE: Office of the National Education Commission and Office of State Universities.

zation in Economics with an emphasis on quantitative economics and mathematical economics in line with more recent international trends. Table 19 shows the five main areas of specialization at both first-degree and higher-degree levels. The curriculum compares favourably with that of any other good university.

How far the curriculum is "relevant," there is no easy way of telling. However, it is interesting to note that, in an interview of a sample of employed Chulalongkorn economics graduates in 1975, their majority thought that their training was not of direct "relevance" to their work.

Table 23 gives an idea of the comparatively small role that Chulalongkorn has played in turning out graduates in economics. Of the

Again, economics should not be taught in an inefficient manner. Fortunately the old system of filling students' time with lecture hours is being gradually replaced by essay or thesis writing and seminar attendance.

Secondly, there appears to be a high degree of fragmentation of subjects even at this early stage of specialization. At one place as many as 21 courses are offered in one field of economics alone, though, owing to physical and other limitations only a few of these can be taken in actual fact. One can well appreciate the value of such refined specialization at a higher stage of studies; but at this level it may make students lose sight of the wood for the trees.

Thirdly, while students get fairly sufficient grounding in economic principles, it appears to be true that they are not getting enough direction in the application of such principles to the various aspects of their economy. This is no fault of teachers; for lack of time for intensive research in the field has generally prevented them from getting illustrations from real life and has compelled them to resort to Western textbooks almost entirely. It is fortunate that the situation is improving steadily with the publication of more and more government data which require little or no modification for use in the lecture or seminar room.

Finally, there appears to be a general shortage of economics teachers which results in an unusually heavy teaching load and reliance on part-time lecturers. In one case, where such shortage is particularly acute the teacher-student ratio is as high as 1:80.

Reform of economic teaching in these universities is bound to come not only because of the difficulties already touched on but also because of the sudden rise in demand for economics courses on the part of students. Such rise in demand has been due in no small part to the realization that economists can play a useful role in planned social and economic development of the country.

The Faculty of Economics at Chulalongkorn is, in terms of staff, the smallest undergraduate Faculty in the country, NIDA being devoted to post-graduate work. Chulalongkorn staff have, however, relatively high paper qualifications, as can be seen from Table 21.

Qualified staff at Chulalongkorn are backed by normal operations and development resources which were the highest contribution per head of staff in the country, although its apparent weakness lies in research resources, as can be seen from Table 22.

The Chulalongkorn economics curriculum offers strong speciali-

stock of 6,212 locally trained economists found in Thailand in academic year 1972, those from Chulalongkorn accounted only for about 5.5 per cent, the majority coming from Thammasat and Kasetsart.

A look at the list of theses submitted by post-graduate students in economics at Chulalongkorn showed that they were of an applied nature likely to be of direct benefit to policy-making. Foreign demand for Thai experts, local demand for paper and the impact of taxes on economic and industrial development were some of the topics dealt with.

Table 24 depicts a situation which is perhaps typical of graduates in the social sciences, an alarming rate of unemployment of 32.3 per cent. Chulalongkorn graduates, with a corresponding rate of 7 per cent, were not doing too badly, the worst case, with an unemployment rate of 88.6 per cent, being those from Ramkhamhaeng, the "open-admissions" university.

TABLE 24. *Employed and Unemployed Graduates in Economics in Thailand (Sample Output of Academic Year 1974)*

State University or Private College	Number Unemployed	Number Employed				Total Sample
		Civil Service Enterprises	Public Enterprises	Internat- ional Organiza- tions	Private Sectors	
<i>State Universities</i>						
Chulalongkorn	2	8	1	—	18	29
Chiengmai	34	12	3	—	22	71
Thammasat	11	64	63	7	98	243
Kasetsart	18	12	9	—	29	68
Ramkhamhaeng	78	1	—	—	9	88
<i>Private Colleges</i>						
College of Commerce	35	1	—	—	11	47
Kirk's College	—	—	1	—	4	5
Total	178	98	77	7	191	551

SOURCE: Office of State Universities, *Preliminary Evaluation of the Findings of a Survey of Graduate Employment Situation, Academic Year 1974, 1975*.

A sample survey of Chulalongkorn Economics graduates revealed.

TABLE 23. Output of University Graduates in Economics in Thailand Academic Years 1888-1972

<i>University</i>	<i>1888-1966</i>	<i>1967</i>	<i>1968</i>	<i>1969</i>	<i>1970</i>	<i>1971</i>	<i>1972</i>	<i>1888-1972</i>
<i>Graduates</i>								
Chulalongkorn	134	11	20	26	32	42	72	337
Thammasat	1,533	324	376	285	678	579	476	4,251
Kasetsart	555	84	35	77	75	119	156	1,101
Chiangmai	—	36	25	38	64	99	131	393
<i>Post-graduates</i>								
Kasetsart	—	—	8	5	14	3	13	43
NIDA	—	—	13	22	9	7	29	80
Chulalongkorn	—	—	1	—	—	5	1	7
Total	2,192	445	478	453	872	854	878	6,212

SOURCE: Office of the National Education Commission and Office of State Universities, Thailand.

Secondly, the sciences are more readily applicable than the social sciences. In fact, their implantation has helped to effect an effortless transfer of technology from the more advanced countries. With concrete results to show for it, implantation of the sciences becomes cumulative. On the other hand, the social sciences, to be applicable, need to be supported with further local research, which has proved to be difficult to organize.

Finally, there appears to have been a failure to integrate the social sciences, while there is a sense in which the sciences constitute an integral unit. For instance, a general science degree course at Chulalongkorn has proved to be highly successful, whereas it is difficult to give even a general social science introduction to students in the Arts or Sciences streams. Divergence of approaches and jargons have not helped an effort to organize multi-disciplinary courses in the social sciences either. Scientists themselves are relatively gregarious, while social scientists happen to be strong individualists who could come to terms with one another only at the feet of a master of international renown.

It can be seen from Table 25 that, up to academic year 1966, only 1,731 Science graduates had been turned out in Thailand. They constituted only about 4 per cent of the stock of all university graduates existing in academic year 1966, as against the corresponding figure of about 42 per cent for social science graduates.

It is equally clear that, up to academic year 1966, Chulalongkorn University monopolized the teaching of the sciences, and that, even as late as in academic year 1973, it still played a dominant role especially in physics, botany, zoology, geology, chemical technology, bio-chemistry, general science, marine sciences, analytical chemistry and computer science. Kasetsart, with its obvious interest in agriculture, had an important role to play in biology, microbiology and genetics, while the medically-oriented Mahidol and Chiengmai universities have been strong in chemistry.

At Chulalongkorn the Department of Chemistry, within the Faculty of Science, had in 1975 a full time staff of 49 of whom 9, 24 and 16 were Ph.D., M.Sc., and B.Sc. holders respectively. Its curriculum compares favourably with that of any other good university. Its contribution to the national output of chemistry graduates could be assessed from Table 26.

It is clear from Table 26 that until 1966, Chulalongkorn had been the only university turning out graduates in Chemistry, and

- (i) that those who are working for the civil service are either university teachers and planners or economists attached to such Government units as the Ministries of Finance and Communications;
- (ii) that many of those working for the public enterprises are with the central bank, either in research or operations divisions, and
- (iii) that many of those working for the private sector are either teachers at private colleges or analysts attached to commercial banks.

Their role could be said to be that of "managing and administering" development.

Natural sciences

The sciences began to be taught in Thailand in 1918 with the foundation, at Chulalongkorn, of the Faculty of Arts and Sciences. They were primarily taught as tool subjects for future doctors and engineers, though training of science teachers was also envisaged. It is clear, then, that from the very beginning sciences were introduced with a view to their practical application. In fact, the social sciences were implanted with exactly the same objective in mind.

Despite similar beginnings, only the sciences have taken root while there have been difficulties in implanting and acclimatizing the social sciences. The sciences have the supporting infrastructure of the State-run Applied Scientific Research Corporation of Thailand (ASRCT), a well-established society of scientists and a strong committee of the National Commission for Unesco. The social sciences have similar organizational support, through the counterpart to the ASRCT remains to be created. It is difficult to explain the relative successful implantation of the sciences, though some speculative points may be mentioned as likely hypotheses.

First, the sciences are, in a sense, neutral and value-free, while the social sciences are not. The Thais have readily taken to the sciences because they do not carry with them implications in terms of social values incompatible with traditional ones. On the other hand, the social sciences, some of which are more value-charged than others, have been viewed with suspicion. There has always been a vague apprehension that implantation of the social sciences amounts to adoption of values undermining traditional ones.

	Chiengmai	16
Biochemistry	Chulalongkorn	9
	Mahidol	2
General Science	Chulalongkorn	—
	Kasetsart	—
Marine Sciences	Chulalongkorn	186
Analytical Chemistry	Chulalongkorn	—
Organic Chemistry	Chulalongkorn	—
Microbiology	Mahidol	—
	Kasetsart	—
	Chulalongkorn	—
Physical Chemistry	Mahidol	—
Chemical Physics	Mahidol	—
Genetics	Mahidol	—
Computer Science	Kasetsart	—
	Chulalongkorn	—
Total for Sciences		1,731
		651
		80

Source: Office of the National Education Council and State Universities.

TABLE 25. Number of Graduates in Sciences in Thailand, Academic Years 1888-1966 and 1973

Science Field	University	1888-1966		1973		Higher Degree
			First Degree			
Physics	Chulalongkorn	281	—	40	—	5
	Kasetsart	—	—	4	—	—
	Chiengmai	—	—	19	—	—
Chemistry	Chulalongkorn	552	—	32	13	—
	Kasetsart	—	—	24	—	—
	Chiengmai	—	—	30	—	—
	Mahidol	—	—	54	—	—
Chemical Technology	Prince of Songkla	128	—	49	—	—
Mathematics	Chulalongkorn	202	—	42	—	—
	Kasetsart	—	—	21	—	—
	Thammasat	—	—	12	—	—
Prince of Songkla	Chiengmai	—	—	12	—	—
Biology	Chulalongkorn	152	—	55	—	—
	Kasetsart	—	—	8	—	—
	Chiengmai	—	—	22	—	—
	Mahidol	—	—	26	—	—
Botany	Chulalongkorn	69	—	1	—	—
Zoology	Kasetsart	—	—	31	3	1
	Chulalongkorn	98	—	—	6	—
Geology	Chulalongkorn	61	—	—	3	—
					17	—

that, though since 1967 one university after another has begun to do the same thing, Chulalongkorn still has a predominant role to play. Moreover, it appears to be the only place offering post-graduates training in chemistry. Finally, its chemistry programme is supported by those in chemical technology, biochemistry and analytical chemistry, as can be seen from Table 25. Chulalongkorn's pre-ponderance is clear from the fact that, of the stock of 1663 locally-trained chemists existing in academic year 1972, its graduates constituted 56 per cent.

When attention is turned to absorption of Chulalongkorn Chemistry graduates by the economy, our impression that they have been well-trained is confirmed. A sample survey of the 1973 academic year graduates conducted early in 1975 revealed that they could all find employment both in the private sector, in the civil service and public enterprises, the majority (60 per cent) being with the private sector, where, obviously, economic and industrial development requires the use of trained chemists.

As can be seen from Table 27, graduates of other universities, particularly Chiengmai, possibly with a much larger output, were not as fortunate as those of Chulalongkorn.

TABLE 27. Employed and Unemployed University Graduates in Chemistry
(Sample Output of Academic Year 1973)

University	Number Unemployed	Number Employed			
		Civil Service	Public Enterpris- es	Inter- national Organizations	Private Sector
Chulalongkorn	—	4	2	—	9
Chiengmai	3	14	2	3	19
Mahidol	—	—	—	—	2
Prince of Songkla	6	8	—	—	2

SOURCE: Office of State Universities, *Preliminary Evaluation of the Findings of a Survey of Graduate Employment Situation, Academic Year 1973*, 1975.

A similar sample survey for graduates of academic year 1974 shows that graduates in chemistry from Chulalongkorn were then facing prospects of unemployment, though it might be temporary. Thus of the 18 graduates who responded to the survey questionnaire, three could not find employment, four wanted to pursue post-graduate work, nine were working in the private sector and two

TABLE 26. Output of University Graduates in Chemistry in Thailand Academic Years 1888-1933

<i>University</i>	<i>1888-1966</i>	<i>1967</i>	<i>1968</i>	<i>1969</i>	<i>1970</i>	<i>1971</i>	<i>1972</i>	<i>1888-1972</i>
Hulalongkorn Graduate School	552	54	29	32	122	98	48	935
Chitengmai	—	1	3	—	214	21	2	241
Prince of Songkla	—	16	12	43	78	169	—	318
Mahidol	—	—	—	—	—	70	25	91
Kasetsart	—	—	—	—	—	49	14	63
Total	552	71	44	75	414	407	100	1,663

SOURCE: Office of the National Education Council and Office of State Universities, Thailand.

Table 29. Employment of Chulalongkorn University's Chemistry Graduates, 1935-73

Civil Service	Public Enterprises	International Organizations	Private Sector
Chulalongkorn U.	65 Tobacco	7 Laboratories	2 Petroleum
Other Universities	90 Glass	6	Cement
Colleges and Schools	122 Electricity	2	Synthetic Fibres
Science Department	39 Batteries	6	Sugar
Natural Resources Department	32 Pharmaceuticals	12	
Others	95 Oil Refining	4	Detergent
	Preserved Food	2	Brewing and Distilling
	ASRCT	2	Teaching
	Others	7	Paper
			Pharmaceuticals
			Cassava Processing
			Plywood
			Glass
			Paper
			Plastic
			Beverages
			Tyres
			Cosmetics
			Animal Feed
			Others
Total	443	48	2
			132

Source: Department of Chemistry, Chulalongkorn University, *Chemistry 1974*, 1974.

found work with the civil service.

Data with a somewhat different coverage from the 1974 academic year sample survey show that trained chemists may find it more and more difficult to find jobs. This could reflect imperfections of the labour market, market saturation or even temporary stagnation in investment and industry.

TABLE 28. *Employed and Unemployed University Graduates in Chemistry
(Sample Output of Academic Year 1974)*

University	Number Unemployed	Number Employed			
		Civil Service	Public Enterpri- ses	Inter- national Organizations	Private Sector
Chulalongkorn	3	2	—	—	9
Kasetsart	1	—	1	—	6
Chiengmai	7	13	1	—	21
Khonkaen	1	1	—	—	—

SOURCE: Office of State Universities, *Preliminary Evaluation of the Findings of a Survey of Graduate Employment Situation, Academic Year 1974, 1975*.

A glance at the list of theses submitted by post-graduate students in chemistry of Chulalongkorn in academic year 1974 reveals that their great majority are of an applied nature and are therefore likely to be of direct benefit to industrial and agricultural development. Chemical analysis of local orchard soil, chemical analysis of local pharmaceutical plants and fruits and chemical studies of local hospital patients and youth are some of dominating themes.

It can be seen from Table 29 that, of the stock of 625 Chulalongkorn Chemistry graduates as could be found at the end of 1973, about 69 per cent are working for the civil service while approximately 21 and 8 per cent are working for the private sector and the public enterprises respectively. In the civil service employment, about 63 per cent of the Chemistry graduates are engaged in teaching in universities, colleges and schools, while the rest are either in government laboratories or offices administering scientific and industrial development. Their role is that of transmitting skills and administering development. Their direct role in the transfer to technology and in industrial production is clear from their employment in public enterprises and the private sector. Table 30 confirms

that Chulalongkorn University graduates must have had an important role to play in dynamic sectors producing sugar, cigarettes, cement, man-made textiles and tyres.

An examination of research grants received by staff of the Department of Chemistry at Chulalongkorn for academic year 1972 reveals that they constituted about US\$14,577 or about 36.6 per cent of the total for the Faculty of Science. In a similar manner to research carried on by post-graduate students, that undertaken by staff consists of a reasonable proportion with an applied nature likely to be of direct and immediate benefit to industrial and agricultural development. Things like food technology and locally-found sea animals have been dealt with.

Some members of the staff of the Department of Chemistry at Chulalongkorn have been actively involved, quite outside the realm of their professional competence, in general university development and research administration at the national level.

Engineering

Engineering is a relatively new profession for the Thai, though Buddhist temples, many massive and of tremendous weight, have been built in Thailand for almost twenty centuries. That these have stood on Bangkok's soft marine clay soils with little deterioration is a tribute to their builders. The methods of construction used had been evolved through previous centuries of trial and error by monks and builders with no engineering background.

Nevertheless, it is true that in the past there appears to have been little interest in engineering as profession and that the few early engineers that Thailand possessed had gone abroad, usually to Europe, for their education. Locally-trained engineers only emerged when Chulalongkorn University conferred its first degree in engineering in 1935, though formal engineering training began with the School of Mechanical Studies of the Civil Service College founded in 1913 out of the remnants of the Canal Construction Department of the dissolved State Agricultural School.

Since a riverine and coastal geography requires development of a canal system for irrigation and transport, it seems that in Thailand the predecessor of the Royal Irrigation Department has been in existence for centuries and was perhaps the first of many engineering organizations in the country. Their first efforts were again surely in the same category as construction of the Buddhist temples

TABLE 30. Production of Certain Manufactured Goods, 1961-74

Product	1961	1969	1974	Index	
				1961-74	1969-74
Sugar (metric tons)	150,000	318,120	967,950	645.30	304.72
Beer (1,000 litres)	—	39,242	44,475	—	113.34
Condensed Milk (metric tons)	—	55,368	74,861	—	135.20
Cigarettes (metric tons)	9,739	14,419	20,017	973.9	138.82
Man-made Textiles (1,000 yards*)	—	18,232	285,000	—	1,563.19
Plywood (sheets)	—	2,719,427	3,151,638	—	158.93
Paper (metric tons)	—	39,171	33,829	—	112.12
Cement (metric tons)	800,284	2,403,385	3,923,319	490.24	163.24
Petroleum products (1,000 litres)	—	3,607,113	6,804,178	—	188.63
Detergent	—	27,188	45,576	—	167.63
Tyres	—	480,086	1,168,780 ¹	—	243.45

¹1973.

Source: Bank of Thailand.

and a considerable number of the most promising students were sent abroad on government-financed scholarships and have become leaders in government service. It thus appears that, as in other countries, a number of otherwise qualified engineers have been willing to accept the security of government service.

Government departments have traditionally been the employer of the major number of Thai engineers but in the post-Second World War era small consulting firms have developed, first to give technical support to the foreign consultants and more recently to undertake projects of their own initiative or for various clients.

The rich variety of engineering courses offered by Chulalongkorn can be seen from Table 31. Apart from catering for traditional fields, the university is a pioneer in such newly-emerging fields as Nuclear Technology.

TABLE 31. Chulalongkorn's Enrolment and Graduates in Engineering 1973

Engineering Field	Enrolment		Graduate	
	Under-graduate	Post-graduate	First Degree	Higher Degree
Engineering	473	—	—	—
Mechanical Engineering	321	39	76	3
Electrical Engineering	373	114	105	2
Industrial Engineering	—	—	74	—
Chemical Engineering	—	—	24	—
Industrial Chemical Engineering	145	18	—	—
Civil Engineering	201	25	143	—
Metallurgical Engineering	43	—	—	—
Sanitary Engineering	49	90	4	18
Industrial Plant Engineering	190	39	—	—
Mining Engineering	31	—	10	—
Survey Engineering	12	—	4	—
Nuclear Technology	—	107	—	18
Structural Engineering	—	15	—	—
Geotechnical Engineering	—	8	—	—
Transport Engineering	—	8	—	—
Hydraulic Engineering	—	5	—	—
Total	1,838	468	439	41

SOURCE: Office of State Universities.

The Department of Civil Engineering at Chulalongkorn, within the Faculty of Engineering boasted, in the academic year 1973, a

with application only of methods developed through trial and error.

Further evidence of the past lack of interest in the profession is the lack of a single source history of engineering in Thailand. To obtain the chronology of engineering development in Thailand, it is necessary to search the archives of the various government organizations or depend on the keen memory of the few engineers who were here and active in the profession in the twenties and thirties. Apparently, the Royal Irrigation Department came first, and the State Railways of Thailand second as a modern over-land transport system was required. These organizations along with others such as the Highway Department performed the day-to-day work and normal expansion of the systems. European engineers however, were engaged for major engineering developments, which Thailand, then a relatively wealthy country, could afford. Consequently the railway system was designed by German engineers; British and French engineers designed the river crossing bridges prior to the Second World War. After the war with the advent of the United States assistance programme, most major projects were designed by United States engineering consultants who were engaged in Thailand in such fields as highway, irrigation, airport, power and mining projects. The first modern methods for highway construction were used in Thailand during construction of the Friendship Highway linking Thailand and Laos. As funding shifted to such international funding agencies as the World Bank, the ADB and the UNDP, United States, engineers were joined by Europeans, Australians, Japanese and Canadians. The post-war period has indeed been *the* development period of the engineering profession in Thailand.

With tremendous increase in engineering development, there emerged a serious shortage of local engineers and technicians. Many technicians were trained by foreign engineers, and the universities geared up to educate engineers to meet the demand. Salaries paid engineers by foreigners, higher than those obtainable in other professions, attracted a large number of qualified students who might otherwise have gone into other lines. These engineers, at first the supporting staff of the foreign ones, have since assumed numerous responsible positions for others or begun undertakings of their own. Others have also welcomed the opportunity to become managers and leaders in industry or in the consulting field,

Table 33. Thailand's Output of Civil Engineers, Academic Years 1888-1972

University	1888-1966	1967	1968	1969	1970	1971	1972	Total
Chulalongkorn	566	130	128	134	140	146	96	1,340
SEATO-AIT (post-grad.)	283 ¹	19	51	—	—	—	—	353
Kasetsart	—	—	17	36	31	38	45	167
Khonkaen	—	—	22	41	51	—	42	156
Prince of Songkla	—	—	—	—	4	6	14	24
King Mongkut's Inst. Tech.	—	—	—	—	74	86	96	256
Total	849	149	218	211	300	276	293	2,296

¹SEATO Graduate School of Engineering, currently AIT.

Source: Office of National Education Council and Office of State Universities, Thailand.

TABLE 32. *Chulalongkorn University Civil Engineering Staff by Main Characteristics, Academic Year 1973*

Countries of Terminal Training	Degrees Obtained			Total
	Bachelor's	Master's	Doctorate's	
United States		6	6	12
Canada		2		2
SEATO-AIT ¹		6		6
Thailand	1	3		4
Japan		1		1
United Kingdom	1			1
Total	2	18	6	26

¹The SEATO Graduate School of Engineering which has become the Asian Institute of Technology (AIT).

SOURCE: Faculty of Engineering, Chulalongkorn University.

teaching staff of 26, whose majority (about 70 per cent) had master's degrees and about 23 per cent had doctorate degrees. Their countries of terminal training were mainly the United States, though most of them had their first-degree training at Chulalongkorn.

Its curriculum compares favourably with that of any other good university. Apart from imparting technical competence, it is intended to give students an awareness of legislation and economic realities serving as their working environment.

Of the stock of Civil Engineering graduates available in academic year 1972, 1,943 were, strictly speaking, on the labour market in Thailand, whereas 353 from the SEATO Graduate School of Engineering and subsequently the Asian Institute of Technology were international in nature. Of the minimum corps of 1,943 civil engineers trained locally, roughly 69 per cent was contributed by Chulalongkorn. Indeed, as in the case of chemists, Chulalongkorn has had a preponderant role to play in the turning out of civil engineers.

In the sample survey covered by Table 34, Chulalongkorn graduates in civil engineering in academic year 1973 were finding it difficult to find employment: roughly 11 per cent were unemployed. In any case, civil engineers from other institutions of higher learning, though the output from each of them was comparatively small, were having higher rates unemployment, the sole exception being

TABLE 34. *Employed and Unemployed University Graduates
in Civil Engineering
(Sample Output of Academic Year 1973)*

<i>University</i>	<i>Number Unemployed</i>	<i>Civil Service</i>	<i>Number Public Enter- prises</i>	<i>Employed</i>	<i>Total Sample</i>
				<i>Inter- na- tional Organ- izations</i>	
Chulalongkorn	11	11	11	—	99
Kasetsart	8	16	1	—	33
Khonkaen	6	14	8	—	35
Chiengmai	4	11	3	—	26
Prince of Songkla	5	9	2	—	21
King Mongkut's Inst. Tech.	1	9	1	—	16
Total	35	70	26	—	230

SOURCE: Office of State Universities.

those from King Mongkut's Institute of Technology where much more emphasis has been put on the applied aspects of civil engineering. The private and the public sectors between them have been absorbing all these graduates in civil engineering.

The general impression obtained from data in Table 34 is confirmed by less complete ones of Table 35, though it appears that

TABLE 35. *Employed and Unemployed University Graduates
in Civil Engineering
(Sample Output of Academic Year 1974)*

<i>University</i>	<i>Number Unemployed</i>	<i>Civil Service</i>	<i>Number Public Enter- prises</i>	<i>Employed</i>	<i>Total Sample</i>
				<i>Inter- na- tional Organ- izations</i>	
Chulalongkorn	7	12	5	—	60
Kasetsart	1	—	1	—	2
Khonkaen	3	6	4	—	22
Chiengmai	1	7	4	—	24
Total	12	25	13	—	108

SOURCE: See Table 24.

lopment. Of course, when a rate of return approach is applied to the Thai case, it may be true that expenditure could have yielded higher return had it been devoted to elementary rather than higher education.

Apart from difficulties in selecting the right approach to manpower planning, the Thai Government has faced serious problems which have emerged out of inflation in the 1970s. Inflation has reduced the real resources earmarked for higher education, despite the fact that the Government has planned for a nominal increase in the use of national resources. Thus universities have been unable to compensate staff for loss in real income due to inflation, and money earmarked for facilities and equipment lost a great deal of its purchasing-power in the process. Quality has, as a result, suffered.

While there are clear sign-posts at the macro level, at the micro one it is evident that Chulalongkorn University, being the first university to be established in the country, has a well-supported claim to become the national university. In terms of disciplines Chulalongkorn has, with a few gaps, the widest gamut of subjects taught. Our survey has shown that, by producing graduates in the right fields and of the right quality as well as by its pioneering efforts in many areas, Chulalongkorn has certainly played an important role in national development.

There is no doubt that Thai universities have had a positive role to play in national development. This is not to pretend that all is well with them. Indeed, their potential contribution would be much enhanced if some of the major problems facing the existing university system were solved.

Such problems can perhaps be defined, albeit in a dramatic manner, if they are given a historical perspective with a specific reference to the World Bank Mission's Report on Thailand published in 1959, *A Public Development Programme for Thailand*. Here are its findings with regard to higher education in Thailand:

Large classes

One of the first things to be noted is the high student-faculty ratio. At Chulalongkorn University, in 1956-57, there were 4,224 students and an academic staff of 234 (full-time or equivalent), giving a ratio of 18:1, which is about twice that of the representative American or European university.

4 Conclusion

Since Thailand introduced its economic development plan in 1961, higher education has expanded rapidly both in terms of new institutions being established, new courses being offered and more students being admitted. Such development may be attributed to two important factors, namely, the acceleration of national economic and social development entailing the need for more high-level manpower, and the increase in population and young people demanding places in institutions of tertiary education. The upshot of the rapid expansion of higher education is that the country now has 22 institutions of higher learning, of which 12 are run by the Government. Of the 10 institutions set up and run by private individuals only 8 have university status.

Of course, the spurt in higher education has caused an influx of a large number of graduates into the labour market each year and has brought about keen competition for vacancies. Admittedly, the potential capacity for work which has been developed through higher education cannot be realized so long as university graduates remain unemployed, though it can be argued that their own cultural and social needs have been met. Meeting their private cultural and social needs as opposed to creating socially useful productive capacity need not necessarily amount to using resources entirely for consumption purposes; for genuinely satisfied human beings could promote national values as well as become more potentially productive. On the other hand, a developing country can ill afford to devote a sizable proportion of its scarce resources to tertiary education, least of all if only to turn out graduates many of whom become idle and eventually, unless work can be found, unemployed.

In examining manpower development efforts by means of universities, even though the manpower approach adopted may have had its shortcomings due largely to inaccuracies of manpower demand forecasts, it is clear that Thai universities have had a positive role to play in providing technical manpower for managing Thai deve-

special staff, many are far from adequately qualified. This is due partly to the extreme youth and recent rapid growth of Thailand's universities. It has been impossible to provide trained people fast enough to cope with rising enrolments.

Reading ability and reading facilities

At least as serious as any of the aforementioned deficiencies is a curious combination of circumstances that results in ineffectual education. First, the student spends far too many hours in the classroom instead of in reading, thinking and writing. At Chulalongkorn and the teacher training institutions, from 25 to 30 hours per week of classroom attendance is common. Second, library facilities, in the form of hooks, comfortable and well-lighted reading accommodations and clerical assistance, are highly inadequate. And third, the student's ability to read English, the language he must use for most assigned reading, is so poorly developed that he cannot reasonably to read extensively.

The last two factors go far to explain the first, great reliance upon lectures. The outcome of all three is a "spoon-fed" system of education that emphasizes memory, exposes the student to a limited number of points of view and consequently discourages critical or original thinking.

Unless and until the vicious circle of poor comprehension of English, poor library facilities and excessive demands for classroom attendance is broken, raising the standards of teaching with foreign help can come to grips with only one aspect of the problem. The present "spoon-feeding" will inevitably continue, though the ingredients fed may be more digestible and more nourishing. Active student participation in the educational process cannot come until the student learns to read English with reasonable speed and understanding. Very few translations into Thai are available, even of textbooks. Although some improvement would result from additional translations and from the preparation of original texts in Thai, these possibilities are limited to large classes, owing to the high cost of small editions. The cost element precludes entirely the publication of translations of reference books, journal articles and the huge body of literature falling in the category of "outside reading."

What had been true of 1958, with only four universities existing in Thailand, was largely true of 1974, almost two decades later, as

Low pay

A second noteworthy feature is the low pay of the staff (both academic and non-academic). Civil service scales apply, with assistant lecturers (third-grade officers) receiving, in 1958, from 750 to 1,200 baht a month, lecturers (second-grade) from 1,200 to 2,300, and professors (first-grade) from 2,300 to 3,650 baht (U.S.\$1 = 20 baht). The starting salaries of those comparatively few university teachers with foreign qualifications are about double the scale given above.

As with other civil service positions, these salaries are far below those paid in commerce and industry, making it extremely difficult to hold able people, especially those whose training fits them for private employment. Those who remain in university teaching are under great pressure to supplement their income by outside employment, to the detriment of their academic work.

It was not always thus. Before the war, university salaries were more nearly in line with those in other occupations. To restore university incomes to equality in purchasing power with those of 1938, the salary of an assistant lecturer would have to be a little more than doubled, that of a lecturer would have to be increased by about 140 per cent and of that a professor by 176 per cent.

Staffing and related problems

Another serious deficiency, probably traceable in part to the low postwar salary scale, is the extensive use made of part-time instructors. At Chulalongkorn, in 1956-57, the full-time staff numbered 179, and the special or part-time staff 195. These 195 special instructors carried a teaching load equal to that of 55 full-time staff members.

There can be no objection to using part-time instructors on a limited basis, such as in cases where some person outside the university has special knowledge or unusual attainments in a specialized field. But to rely heavily upon this kind of instruction can only lower a university's standards. Part-time instructors are usually less well qualified than persons specifically trained for the job, their work is more difficult to supervise, and because teaching is for them a secondary (and ill-remunerated) occupation, they cannot be expected to give it the single-minded and concentrated attention it needs and deserves.

Although generally the full-time staff is better trained than the

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a perusal of the *Report on the Evaluation of Chulalongkorn University's Status and Potential during its Third Development Plan Period (1971-75)*, 1974 will confirm. The task of enhancing Thai universities' contribution to national development thus lies ahead.

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4 Conclusion

Since Thailand introduced its economic development plan in 1961, higher education has expanded rapidly both in terms of new institutions being established, new courses being offered and more students being admitted. Such development may be attributed to two important factors, namely, the acceleration of national economic and social development entailing the need for more high-level manpower, and the increase in population and young people demanding places in institutions of tertiary education. The upshot of the rapid expansion of higher education is that the country now has 22 institutions of higher learning, of which 12 are run by the Government. Of the 10 institutions set up and run by private individuals only 8 have university status.

Of course, the spurt in higher education has caused an influx of a large number of graduates into the labour market each year and has brought about keen competition for vacancies. Admittedly, the potential capacity for work which has been developed through higher education cannot be realized so long as university graduates remain unemployed, though it can be argued that their own cultural and social needs have been met. Meeting their private cultural and social needs as opposed to creating socially useful productive capacity need not necessarily amount to using resources entirely for consumption purposes; for genuinely satisfied human beings could promote national values as well as become more potentially productive. On the other hand, a developing country can ill afford to devote a sizable proportion of its scarce resources to tertiary education, least of all if only to turn out graduates many of whom become idle and eventually, unless work can be found, unemployed.

In examining manpower development efforts by means of universities, even though the manpower approach adopted may have had its shortcomings due largely to inaccuracies of manpower demand forecasts, it is clear that Thai universities have had a positive role to play in providing technical manpower for managing Thai deve-

special staff, many are far from adequately qualified. This is due partly to the extreme youth and recent rapid growth of Thailand's universities. It has been impossible to provide trained people fast enough to cope with rising enrolments.

Reading ability and reading facilities

At least as serious as any of the aforementioned deficiencies is a curious combination of circumstances that results in ineffectual education. First, the student spends far too many hours in the classroom instead of in reading, thinking and writing. At Chulalongkorn and the teacher training institutions, from 25 to 30 hours per week of classroom attendance is common. Second, library facilities, in the form of hooks, comfortable and well-lighted reading accommodations and clerical assistance, are highly inadequate. And third, the student's ability to read English, the language he must use for most assigned reading, is so poorly developed that he cannot reasonably to read extensively.

The last two factors go far to explain the first, great reliance upon lectures. The outcome of all three is a "spoon-fed" system of education that emphasizes memory, exposes the student to a limited number of points of view and consequently discourages critical or original thinking.

Unless and until the vicious circle of poor comprehension of English, poor library facilities and excessive demands for classroom attendance is broken, raising the standards of teaching with foreign help can come to grips with only one aspect of the problem. The present "spoon-feeding" will inevitably continue, though the ingredients fed may be more digestible and more nourishing. Active student participation in the educational process cannot come until the student learns to read English with reasonable speed and understanding. Very few translations into Thai are available, even of textbooks. Although some improvement would result from additional translations and from the preparation of original texts in Thai, these possibilities are limited to large classes, owing to the high cost of small editions. The cost element precludes entirely the publication of translations of reference books, journal articles and the huge body of literature falling in the category of "outside reading."

What had been true of 1958, with only four universities existing in Thailand, was largely true of 1974, almost two decades later, as

Low pay

A second noteworthy feature is the low pay of the staff (both academic and non-academic). Civil service scales apply, with assistant lecturers (third-grade officers) receiving, in 1958, from 750 to 1,200 baht a month, lecturers (second-grade) from 1,200 to 2,300, and professors (first-grade) from 2,300 to 3,650 baht (U.S.\$1 = 20 baht). The starting salaries of those comparatively few university teachers with foreign qualifications are about double the scale given above.

As with other civil service positions, these salaries are far below those paid in commerce and industry, making it extremely difficult to hold able people, especially those whose training fits them for private employment. Those who remain in university teaching are under great pressure to supplement their income by outside employment, to the detriment of their academic work.

It was not always thus. Before the war, university salaries were more nearly in line with those in other occupations. To restore university incomes to equality in purchasing power with those of 1938, the salary of an assistant lecturer would have to be a little more than doubled, that of a lecturer would have to be increased by about 140 per cent and of that a professor by 176 per cent.

Staffing and related problems

Another serious deficiency, probably traceable in part to the low postwar salary scale, is the extensive use made of part-time instructors. At Chulalongkorn, in 1956-57, the full-time staff numbered 179, and the special or part-time staff 195. These 195 special instructors carried a teaching load equal to that of 55 full-time staff members.

There can be no objection to using part-time instructors on a limited basis, such as in cases where some person outside the university has special knowledge or unusual attainments in a specialized field. But to rely heavily upon this kind of instruction can only lower a university's standards. Part-time instructors are usually less well qualified than persons specifically trained for the job, their work is more difficult to supervise, and because teaching is for them a secondary (and ill-remunerated) occupation, they cannot be expected to give it the single-minded and concentrated attention it needs and deserves.

Although generally the full-time staff is better trained than the

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a perusal of the *Report on the Evaluation of Chulalongkorn University's Status and Potential during its Third Development Plan Period (1971-75)*, 1974 will confirm. The task of enhancing Thai universities' contribution to national development thus lies ahead.

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